


LIBRARY OF THE
ONTARIO COLLEGE
OF
PHARMACY

PUBLISHERS OF LAW BOOKS
PRINTERS AND BOOKBINDERS

The Casswell Company
LIMITED
145-149 ADELAIDE STREET WEST
TORONTO

LIBRARY OF THE
ONTARIO COLLEGE
OF
PHARMACY





Digitized by the Internet Archive
in 2010 with funding from
University of Toronto

THE
AMERICAN
JOURNAL OF PHARMACY,

PUBLISHED BY AUTHORITY OF THE

PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, JR.

ONTARIO
COLLEGE OF PHARMACY
44 GERRARD ST. E.
TORONTO.

PUBLISHING COMMITTEE FOR 1869:

CHARLES ELLIS,
PROF. JOHN M. MAISCH,

ALFRED B. TAYLOR,
PROF. EDWARD PARRISH,
AND THE EDITOR.

VOLUME XLI.

THIRD SERIES, VOL. XVII.

California College of Pharmacy

PHILADELPHIA:

MERRIHEW & SON, PRINTERS,
243 Arch Street.

1869.



ONTARIO
COLLEGE OF PHARMACY
44 GERRARD ST. E.
TORONTO,

THE

AMERICAN JOURNAL OF PHARMACY.

~~~~~  
JANUARY, 1869.  
~~~~~

NOTE ON AN ADULTERATION OF OPIUM.

BY JAMES T. KING.

On examining a late purchase of opium, I noticed, on breaking open one of the larger pieces, that it was much less tenacious or adhesive than opium usually is when containing the amount of moisture generally found in it.

Although having much more of the fragments of poppy capsules and leaves mixed with it than a good article should, yet this would not account for the peculiar brittleness,* or want of tenacity in the opium, and it was evident that the drug was adulterated.

A portion of the piece was triturated with cold water until well broken down, and then alcohol, equal in measure to the water used, was added and allowed to macerate for several days. It was then transferred to a percolater, and after the tincture had passed through, water was added until the drug was exhausted of all soluble matter.

The residue was transferred to a beaker and thoroughly agitated with water, and allowed to rest for a few minutes until the heavier portion of the drug had subsided. The water, holding the finer part of the insoluble matter diffused through it, was decanted into a filter and the precipitate collected and dried.

On submitting this to an examination with a microscope, the finer portion was found to consist of *starch*. The starch granules differed, however, from any of our more common starches

being larger than those of wheat or corn, and smaller than those from the potato—approaching more nearly the starch from the bean, both in size and form.

With iodine the characteristic blue of the iodide of starch was obtained.

The starchy matter formed about 14 per cent. of the moist opium.

MIDDLETOWN, N. Y., Nov., 1868.

VACUUM MACERATION:—DUFFIELD'S PROCESS FOR FLUID EXTRACTS.

BY THE EDITOR.

For some time past the Medical Journals of the West and North, have had notices of a class of fluid extracts known as "Duffield's," claiming for them great merit as being prepared without heat or evaporation. We have not seen these preparations, but being interested in all improvements in pharmaceutical processes, we wrote to Dr. Duffield for information in regard to his process if he was disposed to give it, so that the merits of the process, if any, might be known to the revisors of the Pharmacopœia, and the following is in substance his reply:—

DETROIT, Mich., Oct. 6th, 1868.

"Dear Sir.—Your favor came duly. * * * *

As regards *my process*, it is not patented. It differs from Dr. Squibb's in *my not percolating*; it differs from Thomas' in every respect, except that I use a press. The whole thing you will appreciate, although it is difficult to make every M. D. understand when I say it is a *vacuum maceration*. I macerate in vacuo, *cold*, using the menstrua of the Pharmacopœia and expressing with hydraulic pressure until I get one pint for one pound of dry ground drug. All I claim in way of novelty is maceration in vacuo for 6 to 10 days, and expression, allowing the liquid to settle in carboys of glass and decant clear with glass syphons and bottle.

"I am satisfied that percolation, as carried on in large establishments, with a class of workmen usually employed, gives very variable results.

* * It takes more alcohol to work my way, but it gives fluid extracts on the large scale equal to those I made when in the drug business from your published formulæ. I enclose [the printed account of] my process, and will be happy to give you more light on the subject.

Yours, &c.,

S. P. DUFFIELD."

The following is the printed account of the process received from Dr. Duffield.

"The drug ground to the requisite fineness is introduced into a strong cylinder, connected with an air pump and the air exhausted; through a syphon tube the requisite amount of menstruum is allowed to be sucked into the vacuum chamber. When we exhaust the air from the tight cylinder, the pores of the comminuted drug give up the air enclosed in them, and when the menstruum is allowed to flow in, it is forced into these pores by the pressure of the air outside. In this way we arrive at a more perfect maceration than by any other method heretofore adopted."

The moist macerated mass is then subjected to pressure to expel the absorbed solution of the soluble matter of the drug, which is made to measure a pint from each 16 troy ounces, by experimental trial of the quantity of menstruum needed to obtain that result.

We have not tried this process, nor have we seen the preparations it affords, but judging from our experience with drugs and solvents we see no reason why the process should not afford a good extract; yet we are not prepared to admit that it is equally efficient with *percolation* properly carried out. The column of powder, in a properly arranged percolater, which has been previously moistened and packed, offers *all* its soluble matter to *each* stratum of the descending column of menstruum, as it passes down slowly through the pervious mass, and the first portions of such percolate must necessarily be saturated solutions. As these heavily loaded portions pass out, the percolation proceeds more readily, because less impeded by soluble matter, and if the fineness of the particles has been properly attended to, so that the process regulates itself with sufficient slowness to give time for the full solvent action of each portion of the menstruum on the entire mass of the powder, there seems no possibility of failure to obtain more highly concentrated solutions than in any other way except by evaporation. Spencer Thomas' process simulates this action by moistening the powder with successive small portions of menstruum, with intervening subjection to great pressure, so as to extend the solvent action of each fraction to all the powder; but the success of this idea is met by a practical difficulty in gaining the requisite force, and in fact does not approach the efficiency of percolation in experienced hands.

As regards the alleged advantage of the vacuum in removing air particles that prevent the contact of the solvent and powder in the cellules of the drug, it may hold good in unbroken tissues, as in kyanizing wood with metallic solutions; but in operating with a fine powder so closely packed as to render the action capillary, this air is driven out by the descending liquid like a piston in a syringe, and its place temporarily occupied by the liquid, which in its turn, by gravity and pressure of the column above, passes down from particle to particle, invading the ruptured cell structure of each till it attains saturation, after which it does not increase in density. There is much to be learned in the relation of solvents to organic matter in the process of percolation, and its practice is so entirely adapted to the shop and within the ability of the pharmacist to study with care and advantage, that it is greatly to be desired that it will be retained as the process of solution *par excellence*, and not substituted by mechanical methods dependent on costly apparatus, and which necessarily throws the preparation of many important classes of medicines into the hands of large manufacturers. Further, we do not believe that evaporation necessitates destruction of medicinal power, when properly conducted, by adapting the method and temperature to the nature of the substance treated.

REMARKS ON THE PREPARATION OF DEODORIZED TINCTURE OF OPIUM.

BY PHILIP L. MILLEMAN.

The May number (1867) of the *American Journal of Pharmacy*, contains a paper by Albert E. Ebert, on deodorized tincture of opium, wherein he advocates the use of benzine for that of ether, as a means of deodorizing this valuable preparation of opium. Since the publication of this paper, I have frequently had occasion to make this tincture in large quantities, and have, by following Mr. Ebert's process, been successful in producing a uniform and good preparation.

I therefore endorse the advantages the author claims for his process over that of the U. S. Pharmacopœia in regard to time

and cost of tincture thus prepared. Still I find a modification of Mr. Ebert's process, when operating on larger quantities, advantageous, viz: 1st. That of using less water for the exhausting of the opium. 2d. Less quantity of benzine to deodorize the watery solution. 3d. Heat not being necessary excepting sufficient to drive off the benzine. It is as follows: Take of opium, dried, in moderately fine powder, by 10 troy ounces; benzine, pure, 3 pints; alcohol 2 pints; water a sufficient quantity. Macerate the opium with 2 pints of water for 24 hours, and express; then repeat the operation twice with the same quantity of water, mix the expressed liquids in a bottle, and add the benzine, shaking it repeatedly after separation of the liquids; decant the benzine, and evaporate by a gentle heat until all traces of benzine have disappeared; filter through paper, adding sufficient water to make the filtered liquid measure six pints; lastly, add the alcohol and mix them together.

CHICAGO, Dec., 1868.

A NOVEL METHOD OF CATCHING MICE.

Having on several occasions noticed mice in our seed barrels, I bethought me of some method of how I might trap the little intruders; they having gained entrance by eating through the chime. To kill them with a stick was impracticable, as the little fellows would invariably escape as soon as the lid was raised to any height. I then thought of saturating a piece of cotton with chloroform and throwing it in and then closing the lid. On raising it again in a few minutes, I would find that life had almost or quite departed. Having on one occasion left the piece of cotton in the barrel, on again returning, found three little mice with their heads in close contact with it, and dead. In the evening I saturated another piece and placed it in the barrel, and on opening it the next morning to my surprise I found *nine dead mice*.

Each coming from his father's hall
To feast at night, securer more
Than in the light of day.

LEAVENWORTH, Kansas, Oct. 8th, 1868.

J. H.

ON SYRUP OF TAR.

By J. B. MOORE.

Tar is a very popular domestic remedy, and is also very highly esteemed by many medical practitioners in the treatment of the various chronic, pulmonary and bronchial affections so prevalent during the damp, cold and changeable weather of the winter and spring seasons in our climate. It is also very useful as a diuretic in certain diseases of the kidneys and bladder.

All of the published formulas for the manufacture of the syrup of tar yield preparations entirely too feeble in the properties of tar to possess much medicinal activity or value; and as the season is approaching when remedies of this class will be in demand, I thought it would not be amiss to offer to the profession a formula which, if carefully and skillfully manipulated, will afford an excellent and efficient syrup. The following formula I have employed, with but slight variation, for the last ten or twelve years:

R. Tar (strained)	℥ j (troy.)
Pulv. sugar (refined)	℥ xij “
Magnesia carb. (rubbed to powder on a sieve)	℥ iij “
Alcohol,	℥ ij “
Water, quantity sufficient.	

Mix the alcohol with six fluidounces of water, rub the tar, in a mortar of sufficient capacity, with one troy ounce of the sugar, and then with the carbonate of magnesia gradually added until the whole is reduced to a uniform pulverulent mixture. To this gradually add, with constant trituration, which should be continued for fifteen or twenty minutes, four fluidounces of the mixture of alcohol and water, then strain with strong expression. Return the residue to the mortar and again triturate, first with one troy ounce of the sugar, and then with the remaining four fluidounces of the mixture of alcohol and water, gradually added as before; finally strain and strongly express, and then reduce the dregs, by trituration, to a smooth and uniform condition, and pack firmly in a glass funnel prepared for percolation and adjusted to the neck of a graduated bottle containing the remainder of the sugar, and pour upon this the

expressed liquid, and when it has all disappeared from the surface, continue the percolation with water until the whole measures one pint. Agitate occasionally until the sugar is dissolved, and strain if necessary. Dose from a dessert- to a tablespoonful.

The cost of the materials to make one pint of this syrup is about thirty cents.

The strained tar, such as is usually sold in gallon cans, answers well for this purpose, but when it is not at hand the crude tar may be dissolved in a small quantity of ether and strained, and the ether allowed to evaporate spontaneously.

This syrup may be made without the use of alcohol, if desired, by substituting water for the latter and increasing the amount of sugar to about fifteen troy ounces; but the amount of alcohol in the preparation being so small that it is not therapeutically objectionable, while it greatly assists in exhausting the tar of its medicinal virtues.

Philadelphia, October, 1868.

NOTE ON QUINIA PILL MASS.

BY WM. P. CREECY.

Mr. Editor, I desire to present to your consideration a method that is in use in our prescription department as a more speedy and elegant way of dispensing quinine in recipes where pills are directed.

We are in the habit of keeping prepared a "quinine mass," made by breaking up the crystals of the quinine with dil. sulph. acid, and making up the mass with honey and glycerin in the proportion of 2 parts of honey to 1 of glycerine. This mass will contain about 15 per cent. of extra weight, and by using $1\frac{1}{2}$ grs. additional in every 10 of quinine you can obtain the amount of quinine prescribed.

The advantages claimed for this preparation are its "plasticity," ready solubility in the stomach, the economy of time in the dispensing of all-quinine recipes, and the diminution in bulk of the pill.

Not being aware of this method being in use generally, I give it for your approval.

VICKSBURG, Miss., Nov., 1868.

THE PARIS EXPOSITION OF 1867.

BY THE EDITOR.

[Continued from page 540, vol. xl.]

In attempting a notice of some of the objects of interest to the pharmacist and druggist, collected together in the Paris Exhibition of 1867, it is with no intention of giving much detail, or of entering closely into the merits of particular classes of articles—none but *jurymen*, who were permitted to handle and take samples of specimens, for closer observation, could do this in a reliable manner: our object is mainly to convey an idea of the general character of the Exhibition, as regards chemicals, drugs, apparatus and other objects more or less connected with the business of the pharmacist. Occasionally we shall wander from the path thus appointed, and we do not pretend to confine ourselves to notes taken on the spot, using the general official catalogue, special catalogues and correspondence, when these will aid our purpose. As stated before, our notices will be chiefly confined to Group V, which includes the classes from XL to XLVI. As a general rule, the articles in the 44th class (chemical and pharmaceutical products) were in the concentric gallery, immediately within the large exterior apartment containing the machinery in motion. The manner of arranging articles varied with individuals and nationalities, but was generally in upright glass cases, with shelving within so as to avoid the dust, whilst in the centre other glass cases of varied form were ranged, within which the most brilliant and important specimens were often found. For some reason, not very apparent, the British section was not well lighted, and the cases were mostly dark colored. This effect is in part due to the management of the interior and partly to this section being shaded by the taller exterior gallery to the south and west, all the light coming from above.

In the very brief notice of this building in our last it should have been stated that the domain of each nation was bounded by lines running from the central court to the circumference, so as to embrace apartments in each of the seven groups, consequently the visitor, by passing along these radiating streets, as they were called, could pass in review the productions of each country of every kind, whilst by following the concentric avenues he could examine the same class of articles as made by all the countries exhibiting. The latter was the order generally preferred by those who entered systematically into an examination of the Exhibition. There were 16 of these radial streets. The main avenue, opposite the Bridge of Jena, was called the Vestibule, and proceeding to the left, through the French department, one passed Rue d'Alsace, Rue de Normandie, Rue de Flandres, Rue de France, Rue de Lorraine, Rue de Provence, Rue des Pays Bas, Rue de Belgique, Rue de Prusse, Rue d'Autriche, Rue des Suisse, Rue de Russie, Rue d'Afrique, Rue des Indes and Rue d'Angleterre. Of the space thus divided into 16ths, France

occupied seven, Great Britain two and a half, Belgium, Prussia and Germany each one, Austria and Switzerland one, Spain, Portugal, Denmark, Greece, Sweden, Norway and Russia another, Italy, Turkey, China, Japan, Persia and Africa another. whilst the United States, Mexico, Brazil and the South American republics together occupied but the half of a 16th. It will thus be seen that France and England, situated on either side of the main entrance, occupied more than half of the building, and exhibited the most extensive and varied collections.

In class 44 there were about 1582 exhibitors, of whom 358 were French, 108 English and only 30 Americans. Austria had 150, Italy 199, Prussia 125, Turkey 98, Belgium 85, Russia 71, Holland 40. Spain 57, Brazil 98, Algiers 44, Switzerland 37, Sweden and Norway 38, the remainder being distributed among ten or twelve other nationalities.

The French Section.—The manufactures of Class 44 in this section represent a gross annual production in France of 240,000,000 of dollars, including all chemical and pharmaceutical products, whether used in medicine or the arts. Among the depositors of pharmaceutical products M. Menier, of *Paris*, made an extensive display. He is widely known as a druggist and manufacturer of pharmaceutical preparations. The collection was rich in alkaloids and organic principles, among which strychnia, brucia, cocaina, codeia and the cinchona alkaloids were prominent, the strychnia in unusually large crystals, vacuum extracts, powders, etc., including the froth-like extracts of French pharmacy, made in vacuo.

M. Berjot, of *Caen*, exhibited a series of these extracts particularly noticeable, together with beautifully dried leaves, flowers, roots, etc., prepared for dispensing, and expressed oils of croton seeds, castor beans and almonds.

M. Guilliermond & Son, of *Lyons*, had a variety of chemical and pharmaceutical preparations of conium, cinchona, etc., and the apparatus used by him in assaying cinchona barks.

M. Dorvault's collection was quite extensive, including many salts of alkaloids, among which valerianate of quinia was conspicuous. Permanganate of potassa and other mineral salts were well crystallized.

M. Dorvault, author of "*d'Officine*," a French dispensatory, has long been the Director of the *Pharmacie Central de France*, an extensive establishment in the east central portion of *Paris*, not far from the Seine, where every need of the dispensing pharmacist is supplied, from the rarest organic and mineral chemicals to the most complex syrups or theriacs of earlier pharmacy. Taking advantage of an invitation, and the company of our friend Dr. Jenkins, of Louisville, we entered this establishment, on a forgotten street, about noon, as the card indicated, and were received in the office very politely by M. Dorvault, who personally conducted us through the entire establishment, including the packing rooms, the wholesale department, where orders are filled ready for packing, the store-rooms, where drugs were kept in bins, barrels and cans,

all labelled in good order, the rooms where operators were bottling and putting up vials and packages, and, above all, rooms for storing herbs, flowers, leaves, etc. We then were shown through the cellars, where various heavy and crude articles were kept; into the fire-proof ether and spirit cellar, where combustible liquids are stored for greater security, and into that where mineral preparations were deposited, from which we ascended and crossed the court-yard to the laboratory. In doing so we were shown the apparatus for calomel and some other mercurials, and that for reducing iron by hydrogen. The latter consisted of four iron tubes, about four inches in diameter, open at both ends, which were supported by nine inch walls, through which they passed, the lateral walls being low, so as to make it easy to remove the fire when the process is finished. The process was not in operation, and we did not learn what was the source of the hydrogen employed, but we presume the process to be nearly identical with that of our Pharmacopœia. In the first story the range of apartments was occupied by the boilers and a very efficient steam engine, communicating power to various parts of the building, and heat for evaporation, distillation, dessication, etc., in numerous forms of apparatus for extracts, syrups, spirits, ethers, etc. In the second story we passed through the analytical laboratory, where constant experimental trials and testings are carried on in connection with the business of the concern. Passing on we came to the apartment devoted to the preparation of gelatin capsules, sugar-coated pills, dragees, lozenges, tablets, gum drops, etc., where the operatives were both female and male; empty capsules are arranged on trays and are taken up, one at a time, and quickly filled from a glass with a tubular spout and replaced on the tray ready for sealing. The lozenge machine is very perfect, first rolling out the mass and then passing it under rollers, where it is cut into lozenges and stamped. Gum troches are moulded in starch powder, shallow boxes of which, pressed full of conical cavities, are used as the matrices, the starch repelling the stiff mucilage and sugar till it sets. The process for sugar-coating pills is that used here in our pill laboratories, and which we derived from France. Above this pharmaceutical department the finer chemicals and preparations are put up and stored. At the top range of the building M. Dorvault introduced us to the museum of materia medica and chemicals, and finally to the library, where the members of the Association, for it is a joint stock company, have their meetings. The impossibility of taking notes at the time, and the many other engagements, prevented a record being kept that might have been more interesting.

M. Dorvault is a man of medium height, well proportioned, and probably 45 years of age, of great personal neatness, wearing the black dress and white cravat so usual with the principal pharmaciens of Paris. His manner is composed, but assured, and he appears to be a perfect master of his business as Director of the large establishment over which he presides. Since our visit it has been announced that the celebrated firm

of Menier & Co., of *Paris*, have merged their extensive drug business into that of the *Pharmacie Central*.

Returning to our subject, we may allude to the assayed opium preparations, that are made with opium containing exactly ten per cent. of morphia, prepared by mixing different assayed opiums so as to make the mixture average ten per cent., exhibited by M. Adriani; and the preparations of calabar bean, physostigmin, or éserin, as he calls it, and various magnesian preparations, by M. Amidée Vée, President of the "*Société de Prévoyance des Pharmaciens*," of *Paris*. This gentleman took a prominent part on the liberal side in the Congress of Pharmacists, and is a fluent and dignified speaker, reminding, us in many respects, of Prof. F. Gurney Smith, of the University of Pennsylvania.

Among the least prominent, but more important, objects was the apparatus and products of M. E. Deiss, of 63 *Rue de Bretagne, Paris*, consisting of bisulphuret of carbon and fats extracted by it. M. Deiss introduced the manufacture of sulphuret of carbon on a large scale, so as to use it as a solvent. The price formerly was six dollars a pound, which, through his process, was reduced to three cents per pound in 1867. Large quantities of oils and fats formerly lost are now rendered available from oil cake, and olive lees, the great volatility of the solvent rendering its recovery easy and leaving the albuminous residues useful for cattle food. At Marseilles, at the Carthusian friary, an immense extracting tank is in use, where, in 36 hours, about 1,000 bushels of the dregs, left by the olive oil presses, are treated with 45 tons of sulphuret of carbon, by percolation, which penetrates the whole mass, dissolving out the oil, and collects in the vessel below. The sulphuret retained in the dregs is then driven down by steam, after which the receptacle containing the solution of oil in the bisulphuret of carbon is connected with a condenser and, on applying steam, the sulphuret is regained, with a loss of only three or four per cent., leaving a residue of from thirty to thirty-five tons of oil, fit for soap making, lubrication and other purposes. (*Chem. News*, vol. xv, p. 256.)

There were several samples of iron reduced by galvanic action in the Exhibition. M. Collas, of *Paris*, noted for his development of the benzole manufacture from coal tar, exhibited one of these obtained from the chloride in solution by one Bunsen pile. It was nearly black and so easily oxidizable that he put it in gelatin capsules. The other specimen was by M. Rousseau, of *Paris*, which had the grey tint of good iron by hydrogen, and is probably purer than that of Collas. Rousseau is a large manufacturer of chemical products and exhibited much that is interesting, as sodium, magnesium, rubidium and thallium. Much of the success in metallurgic operations with some of the newer metals, and in the use of the amalgam of sodium process for extracting gold, has arisen from his success in reducing the price of sodium. Pyrogallic and benzoic acids are also made on a great scale; of the latter, hundreds of tons are produced from the urine of herbivorous animals, collected around *Paris*, by the German method,

in which the hippuric acid is converted into the benzoic by the action of hydrochloric acid.

Armet de Lisle, of *Nogent sur Marne*, has a good display of quinine salts and other cinchona products.

Tessier de Mothey & Co., of *Metz*, exhibited fluosilicic acid and the fluosilicates of potash and soda, and these alkalies in a caustic state, and have introduced a process for extracting potash, based on their cheap furnace process for obtaining fluosilicic acid by the action of heat on a mixture of silica, clay and fluor spar, and conducting the gases into a chamber constantly wet, so as to decompose the fluoride of silicon and condense the fluosilicic acid. With this they extract the alkalies from their chlorides and sulphates.

M. Lamy, of Paris, in a very unpretending case, exhibited specimens of metallic thallium and its derivatives, among which was a thallium glass of great density and marked optical properties, and also ethyl-thallic alcohol of sp. gr 3.600. There were other specimens of thallium in the Exhibition, particularly that of Mr. Crookes. Thallium was the metallic novelty of the English Exhibition of 1862. In the Paris Exposition, Indium, the newest of the metals, was the great chemical novelty. M. Richter, of Friburg, exhibited two bars of this metal, weighing more than a pound, and valued at \$3,600. It looks like cadmium, and many of its properties are like it. It takes its name from the indigo-blue color of its spectrum line. A gold medal was awarded.

It will not do to pass by the unattractive collection of M. Robinet, the Secretary of the Paris Congress. It consists of waters of various sources, selected from among more than 2,000 specimens he has analysed, representing the rivers of France and many of the noted rivers of Europe. M. Robinet is engaged in the preparation of a hydrographic dictionary of France, and has laboriously pursued his investigations to render it a reliable text book on the potable waters of that country, treated geographically, geologically, chemically and in reference to agriculture and public health.

The collections of anilin dye colors in the French department were particularly brilliant. John Casthelaz & Co., of *Paris*, exhibited a rich collection of naphthalin and benzole derivatives by nitric acid, including anilin, picric and benzoic acids. They use the nitric acid from two tons of nitrate of soda per day in producing color bases from benzole and toluole, and in making benzoic acid artificially from naphthalin, one of the most ingenious and important new processes of productive chemistry. (For process see page 118 of this Journal for 1868.)

Coblentz Brothers, of *Paris*, had a beautiful collection, among which are nitrobenzol, binitrobenzol, binitrotoluol, toluylidiamin, paranilin, phenotoluol, etc. This firm have simplified the anilin process. The old Fuschine Company, of *Lyons*, exhibited magnificent specimens of muriate of rosanilin, and Messrs. Poirrier & Chappel, of *Paris*, showed their "Paris

violet," derived from the methyl anilin and dimethyl anilin of Dr. Hoffmann. Those who have compared the display of anilin colors of 1862, at London, with that of 1867, observed a wonderful improvement and extension, and they now include nearly all the colors of the spectrum.

Class 44 includes a large number of French pharmaceutical specialties, not a few of which must be classed with quackeries. Allied to these is the "oil of horse-chestnuts," of M. Genevoix, which he advertises for rheumatism. It is made by saccharizing the fecula of the kernels of horse-chestnuts, probably by the action of dilute sulphuric acid, when the fixed oil separates and floats on the solution, and is removed. Homolle, of *Paris*, the discoverer of digitalin, exhibits that substance, and Winsbach, of *Metz*, a good display of dried plants for medicinal use.

As a whole, the French Exhibition of Class 44 was very extensive and excellent, and said to be the largest display of chemicals ever brought together by a single nation. Classing them in groups, they included large chemicals, anilin colors, varnishes, albumen and gelatin preparations, paints, stearin and wax products, "insecticides," caoutchouc preparations, soaps and pharmaceutical preparations, in which are included the fine chemicals.

Perfumery.—In the line of perfumery and odors the French greatly excel all other nations, and although considered as a separate class (xxv), will here be noticed as allied to pharmacy. The business of perfumery consists of, 1st, the production of original perfume oils, spirits and fat odors, and 2d, the preparation of these in a hundred different ways for the toilet. The country lying between Montpellier and Nice is adapted to the raising of flowers, and, in fact, by far the larger portion of the extensive products of the Parisian laboratories come originally from the southern slopes of the Maritime Alps at Nice, Grasse, Cannes, etc. The exports of French perfumery amount to three millions of dollars, over and above the immense amount consumed in that country, whilst the imports were only two hundred thousand dollars in 1866.

Among the exhibitors of original products, A. Chiris, of *Grasse*, was prominent, exhibiting pomades, perfumed oils, essences and distilled waters. He has a branch garden in Algeria, which French colony has a climate well adapted to this business. Similar products were exhibited by D. Semeria & Co., successors of Rimmel, of *Nice*, J. Mero & Co., of *Grasse*, M. Fouque, of *Nice*, and M. Berjot, of *Cuen*, but the more numerous exhibitors were those who made secondary products. Among these Rimmel made the greatest display, had a fountain of scented water, and in the Park had a little kiosk, where the process of distillation, enfleurage and other processes of the perfumer were exhibited. Piesse & Lubin, Coudrey, Piver, Guerlain and others, too numerous to mention, displayed a numberless variety of perfumes, pomades and articles pertaining to the toilet. We may return to this subject in a future article, after a notice of the British and German sections.

GLEANINGS FROM FOREIGN JOURNALS.

BY THE EDITOR.

True method of keeping the Syrupus Ferri Iodidi.—Mr. J. Hughes (of St. Leonards-on-sea, Sussex, England,) after various experiments in keeping the syrup of iodide of iron in glass-stopped, cork-stopped, and parchment-stopped bottles, and in cold, dark and light places, and in a warm place, arrives at the conclusion that this syrup keeps perfectly if, after being well made of thick syrupy consistence, it is covered with parchment and kept in a warm place. He decidedly condemns cold, dark cellars, as causing the syrup to darken in color, and objects to corks, owing to the tannin they contain.—*Pharmaceutical Journal*, Nov. 1868.

Poisonous Anilin Dyes. Several statements have appeared in the *London Times* tending to prove that some of the brilliant dyes derived from anilin are poisonous to the skin. So long as these colors were used only for dress goods this was not discovered, but recently socks and stockings have been dyed with them and worn to the detriment of some individuals. A report by Dr. Farrel to the *Times*, in May last, in the case of a Mr. M——, states :

“The question now rises, how fuschine, which has been used largely in dyeing for ten years past, has never been discovered to possess any poisonous property. The reply would be, that up to the present time it has been used only for articles of dress not coming in direct contact with the skin. The present is the first case in which I have met with fuschine used for stockings. The stocking is of all others the article of dress brought most in contact with the skin, around which it is, moreover, compressed tightly by the shoe. I must remark also that fuschine is soluble in weak acids. Perspiration is acid, and is nowhere more profuse than in the feet, where confined within the shoe it is absorbed by the tissue of the socks.”

It was thought possibly that arsenic was concerned in the poisoning, as magenta (arseniate of rosein) contained it largely ; but Mr. Crookes states that arsenic has nothing to do with it, as for several years they have ceased to use arsenic in anilin colors, but that all the injurious compound dyes contain *anilin orange*, which is the poisonous substance, having acid properties and rendered soluble by an alkaline solution ; and directly con-

trary to Dr. Farrel, Mr. Crookes thinks that where the perspiration is acid in its normal state no danger exists; but that when the perspiration is alkaline, as in certain abnormal conditions, the dye would be absorbed and become active.—*Pharmaceutical Journal*, Nov. 1868.

Tincture of Pyrethrum Roseum. F. Jager, a German traveller in the East, after speaking of the well known "insect powder" derived from this plant, says (*Brit. Med. Jour.*, May 30, 1868): "A tincture prepared by macerating one part of pyrethrum roseum in four parts of diluted alcohol, and when diluted with ten times its bulk of water, applied to any part of the body, gives perfect security against all vermin. I often passed the night in my boat on the ill-reputed rivers of Siam, without any other cover, even without the netting, and experienced not the slightest inconvenience. The 'buzzing,' at other times so great a disturber of sleep, becomes a harmless tune, and, in the feeling of security, a real cradle song. In the chase, moistening the beard and hands protects the hunter against flies for at least twelve hours, even in spite of the largely increased transpiration due to the climate." Mr. Jager found it specially destructive to ants, the great plague of tropical countries.—*Phar. Jour.*, July, 1868.

Poisonous exhalations from Quinces. A Lyons paper records the fact of death by asphyxia suffered by a lady who slept in a room, previously used as a bed-room, where a large quantity of quinces were stored. According to scientific evidence given in this instance, the air of the room was largely vitiated with a peculiarly suffocating perfume, and a very considerable amount of both carbonic acid and carbonic oxide gases. No fire had been lighted in it, nor was there any other discernible cause of death found but the exhalations of the fruit.—*Chem. News*, October 30.

Purification of Sulphuret of Carbon. M. Millon proposes the following method: the sulphuret of carbon is washed many times with distilled water, as in washing ether, then it is put in a large retort on quick lime. After twenty-four hours contact it is distilled on the lime and the sulphuret is received in a flask containing a large quantity of copper turnings, which have previ-

ously been deprived of adhering fatty matter by roasting and treatment with hydrogen. The lime on which the sulphuret is distilled has all the appearance of soda-ash; it is deeply colored.

When the sulphuret is thus obtained it has an ethereal odor when the nose is held near an open bottle containing it, which, though not perhaps agreeable, is very different from the infectious odor of the commercial sulphuret of carbon.

It was with sulphuret of carbon thus purified that M. Millon and M. Commaille have separated the perfume of the sweetest flowers, and in the same way the perfume of cow's milk, so as to detect certain plants eaten by the animals, the *Smyrniolum olusatrum* among others.—*Jour. de Pharm.*, Nov. 1868.

On the solubility of starch, sugar and gum in Glycerin, by M. Vogel. When starch jelly is heated with glycerin it yields a cloudy solution, which deposits on cooling; the supernatant liquid contains starch in real solution. Glycerin also dissolves sugar and gum very well. One part of sugar requires two parts and a half of glycerin; and one part of gum three and a half parts of the same liquid.—*Jour. de Pharm.*, Nov. 1868.

Falsification of Gum Balls. M. Chevallier says that under the name of *gum balls* a mixture of glucose and gelatin has been found in French commerce. These balls are white without tint, of firm consistence and covered with crystallizable sugar; they are but partially soluble in water, and by maceration the balls become gelatinous masses, which retain their shape in a measure and do not cohere. By heat in water a gelatinous liquid is obtained, which tannin precipitates. True gum balls dissolve readily in the mouth and their solution is not precipitated by tannin.—*Jour. de Pharm.*, Nov. 1868.

On Syrup of Iodide of Iron. M. Jeannel (Bull. de la Soc. de Ph. de Bordeaux,) recommends the use of tartaric acid in small quantity to prevent the oxidation of the syrup of iodide of iron. This preparation, after remaining in contact with the air in a vial simply covered with paper during two months, was neither colored nor clouded, and gave no reaction of free iodine or of ferric oxide. The following is his formula :

Take of iodine,	126.5 grains, troy.
“ iron filings,	61.7 “ “
“ distilled water,	308.6 “ “
“ honey syrup, (simple mellite),	1080. “ “
“ tartaric acid,	7.5 “ “

Mix the iodine, iron filings and water in a matrass. then agitate till the liquid takes a green color, filter and add the mellite and tartaric acid.

This solution contains one-tenth of its weight of iodide of iron. Mr. Jeannel also states that the addition of one two-hundredths part of tartaric acid to colored syrup of iodide of iron clears it and removes partially its inky taste.—*Jour. de Pharm.*, Nov. 1868.

Crystallized Glycerin. M. Werner has succeeded in crystallizing glycerin anew, a quality of that substance which has been doubted; he succeeded neither by agitation nor by cold. As he had recognized the presence of chlorine, he got the idea of introducing some bubbles of chlorine into the glycerin of commerce, and then he obtained little octahedral crystals, very refractive, very hard and crackling between the teeth, but they are deprived of the sweet taste of glycerin, which is the same when they are fused.—*Zeitschrift fur Chemie*, June 17, 1868.

Alcohol from Lichens. M. Stenberg, knowing that the cellulose of lichens is transformed into glucose more readily than that of wood, he has utilized the enormous quantities of Swedish lichens by transforming them into alcohol. He obtained the best results with *Cladonia rangifera*, H., boiling it twelve hours with water containing 12.5 per cent. of SO^3 , H₂O to obtain 66 per cent. of glucose. The glucose has an agreeable taste, but the alcohol possesses a taste of almonds.—*Jour. Prakt. Chem.* and *Jour. de Pharm.*

The use of Glycerin as a Water Bath has been suggested by M. Vogel, (*Neues Repert. Pharm.* 1868) for temperatures above but near 212° Fahr., as it does not emit such disagreeable odor as oils or paraffin; by the admixture of water the points of ebullition may be made to vary.

Point of ebullition of pure glycerin,	262° F.
“ “ glycerin and water, equal parts,	215·6 “
“ “ glycerin 150, water 100 parts,	223 “
“ “ glycerin 175, water 100 parts,	228 “

—*Jour. de Pharm.*, Oct. 1868.

Preparation and Properties of Tar Water. M. J. Lefort, read to the Academie de Médecine on June 9th, 1868, an elaborate paper on tar water, now so much in vogue in Paris as a therapeutic agent. The following conclusions were arrived at :

1st. Norway tar and that of France yield to water equal quantities of soluble matter.

2d. That medicinal tar water may be prepared with either exotic or indigenous tar.

3d. The semifluid tar is preferable to that that is thicker for the preparations of which this substance is the base.

4th. That tar water prepared hot, in close vessels, represents better the natural principles of tar, and is more constant in its composition than when made cold and followed by long maceration in contact with air.

5th. That tar water made with heat contains a mean of about 2 parts in 1000 of fixed and volatile principles.

6th. That tar water contains principally pyrogenous oil of turpentine, creasote, volatile resinoid principles, one or more isomeric acids natural to turpentine, and lastly acetic and oxyphenic acids.

7th. That tar water dissolves from $5\frac{1}{2}$ to 7 grains of iodine to the pint, and that the resulting liquid retains its physical properties containing iodized phenic and oxyphenic acids.

8th. That iodized tar water gives no indications to reagents of the characters belonging to free iodine or the iodides.—*Jour. de Pharm.*, Sept., 1868.

Iodide of cadmium and potassium as a reagent for alkaloids.—M. Marmé proposes this double iodide to precipitate the following alkaloids in a very dilute solution in the presence of sulphuric acid: nicotina, conia, piperina, morphia, codeia, thebaina, narcotina, narceia, quinia, quinidia, cinchonia, strychnia, brucia, veratria, berberia, atropia, hyoseyamia, aconitia, delphinia,

emetia, curarin and cytisin. These precipitates are flocculent and white, but become for the most part crystalline. Quinia and strychnia, diluted with 10,000 parts of water, are entirely precipitated. The precipitates are insoluble in ether, soluble in alcohol, slightly soluble in water, but soluble in an excess of the precipitant. These compounds abandon their alkaloids by agitation with a suitable solvent in the presence of an alkali, and are clearly analogous to the alkaline iodomercurates and iodobismuthates. Iodide of cadmium and potassium does not precipitate the glucosides amygdalin, salicin, saponin, cyclamin, ononin, digitalin, phloridzin, &c.—*Bull. de la Soc. Chimique et de Journ. de Pharm.*, Sept., 1868.

GLEANINGS FROM THE GERMAN JOURNALS.

BY JOHN M. MAISCH.

Dichloro-acetic acid as a cauterizer.—Dr. F. A. Urner has made a number of interesting experiments with this chemical, and arrived at the following conclusions :

The acid is one of the most powerful cauterizers, not inferior in intensity to fumigating nitric acid. It is well adapted for small and large surfaces, may be applied concentrated or diluted, and acts uniformly in depth only upon those places upon which it is applied. It does not produce a strong inflammation upon the surrounding parts, and is accompanied with less pain than other cauterizers, stronger as well as weaker ones. The scab formed is not heavy, it is soon thrown off and small granulations are found underneath. The scars are rather smooth and subsequently not much contracted. In no case were symptoms of toxication observed. Very small quantities are sufficient for one successful cauterization.

The author applies the acid upon small surfaces and deep ulcerations with a glass rod, allowing the adhering drop to fall off previous to the application ; larger surfaces are conveniently touched with a glass or asbestos brush. *Buchner's N. Repert.*, 1868, 513-534.

Chloroform.—Chr. Rump, of Hanover, has made a series of experiments, and arrived at the result that pure chloroform ex-

posed to sunlight undergoes decomposition; chlorine is evolved and soon hydrochloric acid is formed; diffused daylight has apparently no influence, but it is better to keep it in the dark. The best means of preservation is an addition of half to one per cent. of absolute alcohol; such a chloroform remains comparatively unaffected by direct sunlight. Commercial chloroform has had this addition for many years, and no bad effects have been observed in consequence thereof.* For medicinal chloroform the specific gravity of 1.480—1.485 is recommended.

The expansion of pure chloroform, according to the author's experiments, is about .002 for every degree centesimal; we give from his table the spec. gravity at the following temperatures only: 0° C. 1.525, 5° C. 1.518, 10° C. 1.510, 15½° C. 1.500, 20° C. 1.491, 25° C. 1.481. *Ibid.* 545–558.

Cypripedium among Senega has been observed for several years, by Dr. F. A. Flückiger, and was recognized as such by A. E. Ebert, of Chicago. Dr. F. describes the anatomical structure of the adulteration, which agrees with specimens of the rhizome and roots obtained by him from Professor Procter. *Ibid.* 565–569, from *Schweiz. Wochenschr. f. Pharm.*

Nitrite of potassa in saltpeter.—Prof. Boettger states that nearly all commercial saltpeter contains notable quantities of nitrite of potassa, originating undoubtedly from the nitrate of soda, which contains considerable nitrite. Saltpeter is now usually prepared by decomposing this salt with chloride of potassium, and the nitrite remains mixed with it in consequence of insufficient recrystallization. *Ibid.* 570.

New test for nitrates and chlorates proposed by Dr. Braun.—Professor Boettger puts into a porcelain capsule 1 C. C. pure concentrated sulphuric acid, then drop by drop ½ C. C. solution of sulphate of anilina, then the substance to be tested; the whole is slowly stirred with a glass rod. The presence of minute quantities of a nitrate will produce zones of a beautiful red color, caused by the formation of fuchsina. A chlorate will

* It will be observed that Mr. Rump's results are identical with mine, obtained since 1865, and an account of which is found in this journal, 1867, p. 73 and 1868, p. 289.—J. M. M.

produce a splendid blue color. Nitrous acid and nitrites cause the same coloration as nitric acid. *Ibid.* 570-571.

An improved apparatus for the sublimation of benzoic acid has been constructed by C. Rump. It consists of a circular kettle made of sheet iron, 18 inches in diameter, 12 inches high, which is placed upon a good stove and has a cover, through the centre of which a thermometer can be inserted. At two opposite sides the kettle connects with a 6 inch tube 6 inches in length, and these are inserted into tubes 3 inches long, fastened into the paper boxes 44 inches in length and 27 inches wide, at the extreme end of which a hole of 4 inches diameter is cut into the lid and supplied with a tube one foot long. The benzoin or benzoic acid is put into an iron or earthen ware capsule, which is placed into the sheet-iron kettle. The opening in the cover allows the feeding of the apparatus after sublimation ceases. The cover may be kept heated to prevent condensation of the acid, which sublimes very regularly if the thermometer is kept at a temperature of 200 to 240° C. No luting is required. *Ibid.* 671-674.

Potato fusel oil contains, according to Dr. Hugo Trommsdorff, propylic alcohol; besides this, two alcohols appear to be present in it, boiling respectively below 90° C. and between 101 and 103° C. *Ibid.* 688, 689.

Assay of Opium.—Dr. Schneider proposes for the sixth edition of the Austrian Pharmacopœia the following assays:

1. 10 grammes dried and powdered opium are exhausted with altogether 150 grm. water, acidulated with 20 grm. muriatic acid, sp. gr. 1.12; the dried residue must not weigh over 4.5 grm. The liquid, after dissolving in it 20 grm. table salt, is set aside, and after 24 hours filtered. The filtrate is precipitated with ammonia, the crystals collected after 24 hours, redissolved in acetic acid and precipitated with ammonia. The precipitate, after washing and drying, must weigh not less than one gramme.

2. 10 grm. dry powdered opium are macerated for 24 hours with 50 grm. water, and exhausted by percolation in a funnel with 100 grm. more water. The liquid is boiled for 10 minutes with 10 grm. lime, filtered and the residue washed with a little

water; the filtrate is acidulated with muriatic acid, evaporated to 20 grm., filtered, washed, précipitated with ammonia and further treated like 1. *Zeitschr. des österr. Apotheker-Ver.*, 1868, 16, p. 351.

Assay of Peruvian bark.—The same author proposes the following method: 20 grm. calisaya or red bark, or 50 grm. pale bark are powdered, mixed with one-fourth the weight of hydrated lime, introduced into 10 parts parts hot 90 per cent. alcohol, the liquid filtered and the residue exhausted with alcohol. The filtrate is acidulated with acetic acid, distilled and evaporated in a water-bath to dryness, the residue dissolved in dilute acetic acid, evaporated to a small bulk, precipitated by hydrate of lime, washed with little water and exhausted by hot alcohol, the solution evaporated and weighed. The quantities stated ought to yield at least $\frac{3}{4}$ grm. for red, $\frac{1}{2}$ grm. each for calisaya and pale bark. *Ibid.*

Estimation of unsaponified fat in soap.—Prof. Bolley suggests for that purpose commercial benzole or petroleum, of both liquids those portions which are obtained by rectification at and below 85° C. Perutz found that 11.3 grm. French olive oil soap, boiled with benzole, yielded 145 grm. = 1.2 per cent. soluble matter, from which .002 grm. ashes = .015 soap was obtained; the balance was fat.—8.197 grm. oleic soda soap yielded to petroleum .012 grm. = .15 per cent. fat without ashes.—7.314 grm. of the same soap gave with benzole .02 grm. = .27 per cent. fat, the ashes amounting to .001 grm.—6.735 grm. stearin soda soap yielded, with benzole, .003 grm. = .05 per cent. fat without ashes. *Ibid.* N. 17, 382.

Fusing point of fats.—Dr. Th. Wimmel has determined the following:

	Fuses at	Congeoals at	Temperature rises to
Beef tallow fresh,	43° C.	33° C.	36–37° C.
“ “ old,	42.5	34	38
Mutton suet, fresh,	47	36	40–41
“ “ old,	50.5	39.5	44–45
Hogs lard,	41.5–42	30	32
Butter, fresh,	31–31.5	19–20	19.5–20.5
“ old,	32.5	24	25.5

Japan wax,	52·5-54·5	40·5-41	45·5-46
Cacao-butter,	33·5-34	20·5	27-29·5
Cocoanut oil,	24·5	20-20·5	22-23
Palm oil, fresh, soft,	30	21	21·5
“ “ “ harder,	36	24	25
“ “ old,	42	38	39·5
Nutmeg butter,	43·5-44	33	41·5-42
Bees-wax, yellow,	62-62·5	} congeal just below the fusing point without rise of temperature.	
“ “ white,	63-63·5		
Spermaceti,	44-44·25		

If fats are heated until they become thin liquid, and before they have become entirely clear, they will congeal near the fusing point without elevation of temperature. *Ibid.* N. 18, 401, 402, from Poggendorff's *Annalen*.

Peruvian gum is used in Germany for thickening and fixing colors upon cotton goods and wall papers. It consists of the powder of the "peruvian root," collected in Peru from an unknown plant; the roots are 1 to 2 inches long, of the thickness of a quill and over, very hard, reddish brown externally, internally yellowish white with a yellow centre, inodorous and of an insipid, afterwards bitterish, taste; alcohol dissolves some yellow coloring matter. The powder swells with 15 to 17 parts of cold water to a stiff paste of the consistence of honey, which is free from starch and sugar; mixed with much water, a sediment occurs amounting to 8 or 10 per cent. and entirely insoluble in boiling water. Its solubility in dilute acids and caustic potassa and its swelling with water prove the Peruvian gum to consist mostly of bassorin. Its thickening property is six times greater than Senegal gum, which, according to Liebe, possesses, however, greater adhesiveness. *Ibid.* N. 20, 460, 461, from *Deutsche Industrie Zeit.*

ADDITIONAL NOTE ON AMERICAN OPIUM FROM VERMONT.

BY WILLIAM PROCTER, JR.

In the last number of this Journal (Nov., 1868, p. 513) the writer made known what information he could gather of this so-

called "American opium," presented to his notice by Mr. Wilson, of Monkton, Vermont, the manufacturer of it; and he also gave the result of an assay of the specimen of opium placed in his hands by Mr. Wilson, as representing the new product. Since then some further information has been received, several other samples of the "opium" obtained and assayed, and a further conversation had with Mr. Wilson, which has caused the writer to change his opinion of the value of this "American opium," which he formed from the first sample assayed.

Inquiries instituted by a friend in New York State, as to the reality of this opium culture, left no doubt that Mr. Wilson had been engaged for four or five years in promoting the culture of the poppy, with a view to making "opium," and that not possessing land of his own, the poppies were raised in plots, here and there, by farmers in his neighborhood, who were remunerated by a portion of the opium, which Mr. Wilson manufactured at the proper season. It appears that, at the request of a gentleman who had aided him with money, the manufacturer of the "opium" brought to Philadelphia six pounds and delivered it to Messrs. Rosengarten & Sons, who were desired to extract the morphia from it. Being interested in the matter as an American enterprise, they made three separate assays of a lump of the "opium," and were disappointed in obtaining satisfactory results, which, in view of my published assay, caused them much disappointment. Having taken the precaution to preserve all the results of my assay, it required but little time to satisfy Messrs. R. & Sons of its correctness; and at their request I took samples from two separate lumps of the lot of "opium" in their possession, which they sent to me. These lumps were covered with tin-foil; one weighed more than a pound, and the other perhaps half as much. The interior consistence seemed rather softer than the sample before noticed, the exterior being a little firmer. The extract-like appearance was the same, but the odor varied somewhat, being less decidedly that of Turkey opium than was the first sample.

The assays were made with great care, precisely as that published in November. To distinguish the samples I shall letter them, calling that of the original assay A, those from Messrs.

Rosengarten B and C, and a fourth sample, given to me by Mr. Wilson as of the product of 1867 and inferior in quality, which I shall call D. The latter was an egg-shaped mass, weighing $10\frac{3}{4}$ ounces, was nearly dry, covered with poppy leaves and had a heavy, narcotic odor like stramonium and tobacco mixed, altogether different from the samples of 1868, which showed an evident improvement in appearance, at least in the latter.

To render the subject intelligible to the reader not having the first assay before him, it may be stated that 100 grains of each sample was taken, so as to represent both the interior and exterior of the lump. This was in each instance rubbed with water in a mortar till smoothly suspended and dissolved, allowed to macerate for 36 hours, then filtered and the dregs and filter washed. The filtrate was then boiled for twenty minutes with 100 grains of lime hydrated, filtered hot and lixiviated, the filtrate acidulated with hydrochloric acid and evaporated carefully to about half a fluid-ounce. This was then rendered nearly neutral by the cautious addition of ammonia, filtered to separate coloring matter, and the filtrate and washings treated with a moderate excess of ammonia and allowed to stand 12 hours, when the precipitate, if any, was collected, washed and weighed. This method, given in Attfield's Pharmaceutical Chemistry, is a modification of Mohr's.

Opium assayed.	Per centage of moisture.	Residue insoluble in water.	Percentage of crude morphia.
Sample A.	16	25	6.25
“ B.	10	16	0.90
“ C.	11	17	0.40
“ D.		31	0.00

Now it is difficult to decide what inference should be drawn from these results; either the process of Mr. Wilson is very defective and unreliable, producing extraordinary variations in the strength of the lumps of the same lot and of different lots, or the original sample submitted to the writer was not an honest representative of the article manufactured by him, and was calculated to deceive. In the first interview with Mr. Wilson he

was distinctly understood to say that about one-third of his "opium" was the juice of the capsule by incision, and that the balance was an extract obtained from the whole plant by moistening it with alcohol, and expressing and evaporating the juice. In the last interview he informed me that *his process required only one-eighth of inspissated juice*, and he seemed under the impression that he had told me that at first. Assuming that the first sample did contain *one-third* of the juice of capsules, then, as one-eighth is nearly one-third of a third, there should have been over two per cent. of morphia in the samples examined last, whereas the strongest of them had less than one per cent. As we have reason to think that Mr. Wilson expected as good a report of the "opium" submitted to Messrs. Rosengarten & Sons as that first assayed by the writer, the inference we are compelled to draw is that his process is unreliable and his product far too variable to be used as opium, and consequently we must caution our readers not to be unduly influenced by our notice of the opium published in November last, and which at the time we believed was the average product of Mr. Wilson's process.

Notwithstanding this discouraging result, the writer believes that it is quite possible to produce opium of the proper strength by attending to the necessary conditions. These are the culture of vigorous poppy plants, and the extraction of the natural milky juice of the capsules, by carefully wounding the exterior layers by one or more transverse incisions extending around the capsule, so as not to penetrate the interior. The proper consistence may be given partially by evaporation and partially by the incorporation of the ground capsules without the seeds, or with extract of the plant, as prepared by Mr. Wilson. I would prefer the former,—using only enough of it to give the natural juice of the capsules a commercial consistence. All who undertake this business should recollect that opium owes its value to its percentage of morphia, and that no amount of manipulation will make morphia out of extract of poppy leaves. Honesty is the best and only policy for American opium growers, and if it won't pay to make it right they had better employ their labor, time and capital in some other branch of industry.

GLEANINGS FROM AMERICAN JOURNALS.

BY THE EDITOR.

Tonka Bean in Hooping Cough.—Dr. John Cooper, of Phila., in a letter to the editor of the *Medical and Surgical Reporter*, (Oct. 3, 1868), states that the Tonka bean has been tried by him in pertussis for the reason that it contained “coumarin, the active principle of clover tops—*trifolium melilotis*—recommended for that disease.” The form used was the fluid-extract in 5 to 8 drop doses for a child 5 years of age. He found it to relieve the paroxysms and enable the child to sleep at night. His trials extend to five cases, in all of which the action of the drug was sufficiently marked to warrant recommending it to the notice of physicians for therapeutic use, he being “convinced that we have in it a means of saving many lives, besides giving great relief to all who suffer from the disease.”

It would be well to try coumarin itself to ascertain if it is the curative agent in the tonka bean.

The Hot Springs of Arkansas.—There are fifty-four of these springs in all, having a mean temperature of 134° Fahr., and ranging from 63° to 150° Fahr. They discharge altogether 317 gallons of water per minute. The springs are situated on the western slope of Hot Spring Mountain, (which is a margin of the Ozark Mountains) at an elevation of 360 feet above the level of the sea, and about 55 miles west of Little Rock.

Various analyses have been made of them under the direction of the State Geologist, determining the presence of lime, magnesia, alumina, oxide of iron, carbonate of soda and potash, sulphate of magnesia, oxide of manganese, sulphate of lime and traces of bromine and iodine. The waters enjoy great celebrity for their usefulness in cases of rheumatism and gout, and contain a large excess of free carbonic acid, which aids in the solution of some of the earthy salts.

Preparation of Sponge Tent.—Dr. George Syng Bryant, of Lexington, Kentucky, (*Amer. Jour. Med. Sci.*, Oct., 1868,) describes several methods of making sponge tent. The old way was by saturating the sponge with warm melted wax and compressing it until the wax solidified, and then cutting it into suita-

ble shape. The method of Dr. Simpson, of Edinburgh, is to saturate sponge, previously cleansed, with thick gum mucilage, and then having pushed an awl through its centre, a cord is forcibly wrapped around it so as to expel most of the mucilage and reduce the size of the sponge to a small diameter, and dried, when the cord is removed and the exterior of the tent rubbed down with sand paper to the proper shape.

Dr. H. Nott, of New York, prepares an antiseptic sponge tent by saturating the prepared sponge with an antiseptic paste composed of alum, acetate of lead, wheat-flour and gum-water heated to the boiling point, and wraps it with gold-beaters skin. It is then punctured with a small knife blade.

Dr. Bryant recommends that 10 or 12 grains of carbolic acid be dissolved in an ounce of mucilage before using it for the tent, which renders it antiseptic. In preparing the tent, moderately coarse elastic sponge should be selected. Cleanse it well, and while wet cut it into the exact shape and size that is needed to assume after expanding. Then saturate it with the mucilage and wrap it on an awl, which should be pushed through the axis of the conical piece of sponge with strong coarse, well-twisted cord, commencing at the point and carrying the cord around regularly so as to form a close spiral coil. When dry and the cord is removed the surface of the sponge contains a spiral thread which tends to retain the tent in position.

Catalpa Bark.—Dr. Joseph Jones, (*St. Louis Medical Reporter*, Oct. 15, 1868,) calls attention to this bark, about which but little appears to be known, though it has been recommended as an anti-periodic. He thinks caution should be used in its employment, from its generally believed poisonous nature. When the bark is wounded a rank odor is exhaled, and the flowers are said to yield a poisonous honey. The seeds are said to be useful in asthma, taken in decoction.

The alleged poisonous qualities of this plant deserve investigation; we doubt its activity, as the very great abundance of the tree in many localities would have caused some accident if it possessed deleterious properties.

India the great nursery of Cholera.—Dr. John C. Peters, in

an interesting article commencing the September number of the *Chicago Medical Examiner*, gives an account of the geographical progress of cholera in times past from Central India to the rest of the world. He considers the city of Hurdwar, situated at the point where the Ganges issues from the Himalaya region, famous as the point where the largest Hindoo fairs and festivals are held annually at the vernal equinox, as the source of this terrible epidemic. The usual number of pilgrims and merchants is from 200,000 to 300,000 annually, but every twelfth year, which is particularly holy, the number is increased to 1,500,000 to 3,000,000 of devotees and traders, crowded together. This vast concourse, composed of persons from Arabia, Persia, Beloochistan, Afghanistan, Cabul Tartary, Central Asia, and Russia, produce such unfavorable hygienic conditions, that but a few days time is needed to induce an epidemic. In 1783, 20,000 pilgrims died in eight days, and after several similar catastrophes a very disastrous outbreak of cholera occurred in Hurdwar, in 1867, where 3,000,000 Hindoos assembled. From this point the track of the cholera is traced in the lines of the great caravans going south-west, west, and north-west. The Delta of the Ganges is also marked as a cholera centre. From these initial points the epidemic extends to Bombay, Mecca, Alexandria. Bokhara, Astracan, Constantinople, etc. Dr. Peters has described the courses and the causes, the latter due to the accumulation of filth and dead animals, resulting from the vast ill-provided crowd stopping at a place without any precautions being taken to prevent infection. Graphic descriptions are given of the pilgrimages by caravans for religious and commercial purposes, and the incidents and accidents of caravan life.

Belladonna as an anti-galactic.—Dr. D. W. Storment, of Topeka, Kansas, says that a solution of two drachms of extract of belladonna in a fluidounce of water applied over the breast with a brush will stop the secretion of milk, and that its application to one breast will suspend its secretory action without affecting the other, and hence recommends it in mammary abscess.—*Medical Record*, Oct. 1, N. York.

Fluid extract of Frostwort. Prof. Hubert Primm, Ph. D., of

the St. Louis College of Pharmacy, offers a formula for making this fluid extract. It differs in manipulation from that published by the writer in the Proceedings of the Association for 1863, page 236, which is identical with the officinal process for fluid extract of dulcamara. Prof. Primm's process is as follows:

Take of Frostwort leaves,	. . . . .	16 troy oz.
Alcohol,	. . . . .	16 fluid oz.
Water, a sufficient quantity.		
Sugar,	. . . . .	8 troy oz.

Reduce the frostwort to a coarse powder and macerate it in a covered vessel for eight hours with 12 fluidounces of the alcohol. Transfer to a suitable apparatus for displacement, and when the liquid has ceased to flow mix the balance of the alcohol with 4 fluidounces of water and gradually add them to the mass in the percolator until the liquid displaced measures 12 fluidounces, which liquid should, by aid of a water bath, be reduced to *four* fluidounces.

The marc remaining in the percolator should then be treated with one pint of cold water by maceration for twelve hours, and subjected to strong pressure until a pint of liquid is obtained, which should be evaporated to eight fluidounces, mixed with the four fluidounces previously obtained, and the sugar dissolved in the mixture by agitation.—*Humboldt. Med. Arch., Sept. 1868.*

Camphor a preventive of oxidation. Mr. George Wellborn, according to the *Journal of Applied Chemistry*, finds that a small lump of camphor placed in a bottle of recently crystallized protosulphate of iron preserves it from oxidation, the salt affording a transparent solution after it had been kept three months. If the odor of camphor acquired by the salt is objectionable, it may be exposed awhile before using, or it may be removed by alcoholic washing and dried.

Quinine Pills. Dr. Louis E. Atkinson (*Med. and Surg. Reporter*, Sept. 19, 1868,) recommends *tartaric acid* as a means of making quinine pills, by the following process, viz.:

Take of Sulphate of quinia,	. . . . .	20 grains.
Tartaric acid,	. . . . .	4 “
Water,	. . . . .	1 minim.

Triturate the quinia and acid, then add the water, which will form a mass, to be divided as desired. If the acid is dry, the proportion of water is correct; if moist, it is too much. The advantages proposed by Dr. Atkinson are, first, tenacity of the mass easily worked; second, it does not readily lose its pillular consistence, like that made with elixir of vitriol, and may be manipulated without haste. Third, its bulk is not greater than by Parrish's formula, and lastly, no specific skill is needed in its preparation. For another quinia pill mass, see Mr. Creecy's formula, at page 7 of this number.

Haofash, a new styptic. The Paris *Moniteur* gives an account of a tree called "haofash," which grows wild in the mountains of Baria, in Cochin China, in the forests, hidden among lianas and other creepers, which render the woods almost impenetrable. The knowledge of its virtues is confined to the bonzes and physicians who keep it secret. M. M. Condamine and Blanchard, two French travellers, have succeeded, partially by gold, in eliciting the information from a bonze, and give the following account: "The Annanites, who gain their livelihood by selling the bark of the haofash to professional men, wait till the tree has attained its third year before stripping it of its bark, its usual height at that age being about 24 feet, with a circumference of about 18 inches. The operation is performed in June, when the tree has neither blossoms nor fruit; it is hewn down and then denuded of its bark methodically, in slices about two feet long and three or four inches broad. These strips are made into bundles weighing from 30 to 40 pounds."

The bark has an ash-grey color, externally, and brown within; has a strong aromatic bitter taste, and when chewed reddens the saliva. It is a powerful styptic, and is used in cholic, diarrhœa and dysentery. It is prepared for use by decocting from 90 grains to 150 grains in 3 fluidounces of water, reduced to one-fifth by evaporation, for a dose.—*New York Med. Record*, Nov. 2.

Iodine and iron alum water. The following analysis of a recently discovered spring in Virginia is published in the *Medical and Surgical Reporter* of Dec. 5, 1868, signed by Prof. William

E. A. Aiken, M. D., LL. D., of the University of Maryland,
viz. :

SOLID CONTENTS OF A GALLON OF WATER, 105·140 GRAINS.

Sulphate of lime,	6·220	grains.
Sulphate of magnesia,	22·250	"
Sulphate of iron,	30·465	"
Sulphate of alumina,	1·580	"
Sulphate of potassa,	·216	"
Sulphate of soda,	3·022	"
Chloride of sodium,	·874	"
Iodide of sodium,	·850	"
Crenate of iron,	·820	"
Crenate of ammonia,	·641	"
Phosphate of iron,	·302	"
Free sulphuric acid,	28·376	"
Free carbonic acid,	3·500	"
Organic vegetable matter,	·703	"

grains, 99·819

Arsenical spring water in New Jersey. According to the Journal of Applied Chemistry for Dec., page 192, Prof. Doremus has given the following analysis of a spring water existing near Pompton, Passaic County, New Jersey. This is said to be the first arsenical spring yet discovered in this country, and there is only one in Europe. An imperial gallon of 70,000 grains affords :

Bi-carbonate of soda,	44·05	grains.
Arsenicum,	3·10	"
Potash,	10·00	"
Magnesia,	60·00	"
Iron,	15·00	"
Lime,	50·00	"
Sulphate of lime,	23·10	"
Silica,	8·00	"
Bismuth,		a trace.

Total, 213·25

ON VALERIANIC ACID.

By FREDERICK C. MUSGILLER of Brooklyn, N. Y.

QUERY 24.—The U. S. Pharmacopœia defines valerianic acid as having a sp. gr. 0.933. Is this sufficiently accurate for practical purposes? and if not, what standard should be adopted?

The acid of the Pharmacopœia is the monohydrated, or that containing 1 eq. water. Wittstein makes the specific gravity of this acid 0.967, Fowne's 0.937 and Delffs' 0.935. The last mentioned specific gravity was readily obtained by the writer, and was found to answer all the officinal purposes for which it is required, namely, the preparation of valerianate of ammonia, and valerianate of quinia. There is probably some error in the officinal process. The Pharmacopœia, in the preparation of the acid, rejects the distillate so long as it has a specific gravity above 0.940. But it is found by actual experiment that the specific gravity of the acid can never be reduced to 0.933 so long as that of 0.940 is retained, and the writer, in a series of carefully conducted experiments, never succeeded in getting the acid lighter than 0.935 by the officinal process and with ordinary sulphuric acid. He would therefore suggest that, at the next revision of the U. S. Pharmacopœia, the s. g. 0.935 be adopted as the standard, and would also suggest some slight modifications in the details of the officinal process. That successfully followed by the writer is as follows:

Acidum valerianicum—Valerianic Acid.

Take of valerianate of soda in coarse powder, eight troyounces.

Sulphuric acid,

Distilled water, each a sufficient quantity.

To the valerianate of soda add, first, three fluidounces of distilled water, and then three troyounces and a half of sulphuric acid. Mix them thoroughly, and from the mixture, after standing, separate the lighter oily liquid. Pour this into a tall narrow glass vessel and drop sulphuric acid into it without agitation until its specific gravity is reduced to 0.945. Separate the lighter liquid from the sulphuric acid, introduce into a retort, and distill nearly to dryness, rejecting all the distillate which comes over before the temperature in the retort has reached 342°. The rejected por-

tion of the distillate, after being treated with sulphuric acid in the same manner as the first, may be returned to the retort after the first is all distilled off, and the distillation repeated as before. In using the sulphuric acid for dehydration, it is best to have the valerianic acid in a tall narrow glass cylinder or hydrometer jar, then add the sulphuric acid gradually drop by drop, so long as it does not dissolve in the valerianic acid, care being taken *not* to shake or agitate the vessel during the process. The sulphuric acid, as it drops into the valerianic acid, breaks into little globules and falls like fine rain or mist to the bottom. A point is, however, reached when the two acids unite, and this is the limit. After standing a few moments, much of the partially dehydrated acid can be poured off into the retort for distillation, and the remainder may be separated by means of a separating funnel. In manipulating with varying proportions of sulphuric acid for the dehydration, the best proportions appeared to be about 360 grains of the officinal sulphuric acid, and this was applied to about $6\frac{1}{2}$ fluidounces of the valerianic acid (s. g. 0.958) to be dehydrated, or the average quantity obtained by the officinal formula. The writer, however, found it more convenient to use four times the quantity of the officinal formula, and upon such proportions are his general results based. In the last experiment made with four times the officinal quantity, great care was taken to observe the boiling point of the acid, and its specific gravity at the various temperatures during the distillation; each fluidounce, as it dropped from the condenser, was set aside, the specific gravity taken and the temperature at which it came over noted. From the table given below it will be seen that only three fluidounces out of twenty-four were obtained of a s. g. 0.933, ten fluidounces had a s. g. 0.9355, which, when mixed with the three fluidounces of s. g. 0.933, made thirteen fluidounces of s. g. 0.935. The first nine fluidounces that came over were set aside, again treated with sulphuric acid until its specific gravity was reduced to 0.945, returned to the retort, redistilled, and by still another fractional treatment with sulphuric acid and distillation six fluidounces more of valerianic acid of the s. g. 0.935 were obtained from it, making nineteen fluidounces in all, or a loss of five fluidounces in the process. The

writer submits herewith three specimens of valerianate of ammonia, prepared from acids of different degrees of density, as marked on the labels, including a specimen prepared from acid of s. g. 0.933. A careful comparison of them appears to confirm the experience obtained in these investigations and in previous practice on a large scale, indicating that for the only official use to which the acid is applied a higher specific gravity answers equally well and saves much acid, time and labor.

In conclusion the writer presents a table showing the specific gravity of the acid as obtained at different temperatures.

Successive fluidounces as distilled.	Boiling Point.	Specific gravity.	Successive fluidounces as distilled.	Boiling Point.	Specific gravity.
1.	*280° to 328°	0.959	12.	344° to 345°	0.936
2.	328° " 330°	0.952	13.	345°	0.936
3.	330° " 333°	0.948	14.	345° " 346°	0.935
4.	333° " 344°	0.947	15.	346°	0.934
5.	334° " 337°	0.944	16.	346° " 347°	0.934
6.	337° " 339°	0.943	17.	347° " 348°	0.934
7.	339° " 340°	0.941	18.	348°	0.934
8.	340° " 342°	0.940	19.	348° " 350°	0.934
9.	342° " 343°	0.938	20.	350° " 351°	0.933
10.	343° " 344°	0.937	21.	351° " 352°	0.933
11.	344°	0.937	22.	352° " 354°	0.933

* The distillation below 300° takes place without boiling.

The query is therefore answered by an opinion that the specific gravity prescribed by the Pharmacopœia for its valerianic acid cannot be obtained by its process, and is lower than necessary; and that 0.935 would be far more practical and economical, and the results equally good.

BROOKLYN, Sept., 1868.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON GELSEMINIA.

By C. L. EBERLE.

QUERY 11th.—Is the so-called "gelseminia" a neutral or alkaloid principle? Does it exist in the leaves and in the wood of the root, or only in the bark? And does it represent the activity of the plant?

The root of *Gelsemium sempervirens* has for a considerable time been employed in the medical practice of portions of our country as a nervous and arterial sedative—in large doses occasioning dizziness, dimness of vision, dilated pupil and uni-

versal prostration, reducing the force and frequency of the pulse and the frequency of respiration, and producing insensibility to pain, but without stupor or delirium.

It is, therefore, exceedingly potent, and I am cognizant of at least two cases of poisoning by its unintentional use—one resulting in the death of the individual, the other recovering only upon the prompt administration of an antidote.

During the past twenty years various writers have commented upon its uses and effects in the different medical journals of the day.

So far as I can learn no published account of the existence of an alkaloid, covering the active principle of *Gelsemium sempervirens* exists, if I may except a reference to its appearance by Mr. Henry Kollock, Amer. Journ. Pharm. xxvi, 203, which was not elaborated. Yet I have received *private* statements of its presence and production, and have been privileged to examine an impure sample of the so-called “gelseminia,” prepared by Prof. Maisch, which gave decided alkaline reaction with appropriate tests.

This gelseminia was produced by the following process :

An alcoholic tincture was evaporated to small bulk, diluted with water to precipitate resin, filtered, precipitated with tannic acid, treated with hydrated oxide of lead, exhausted by alcohol and evaporated ; before dryness ether was added, and upon spontaneous evaporation greenish red crystals mixed with resinous matter resulted.

With a view to properly determine this query, early arrangements were made to procure from Albany, State of Georgia, through Messrs. Welsh, a supply of *Gelsemium sempervirens*, which, being collected at the proper period, arrived during the spring of the present year. Upon examination the sack forwarded contained portions of the entire plant, the gross weight of which was six av. pounds, 13 ozs. being roots, $13\frac{1}{2}$ ozs. leaves, the remainder vines, and were shipped in this form in consequence of a misunderstanding, my purpose requiring but the roots and leaves.

The roots being prepared for percolation, were exhausted with strong alcohol, the tincture evaporated to the measure of a few

fluidounces (3), water added carefully to precipitate a portion of the resin. A green fixed oil removed from the surface of the liquid with bibulous paper by absorption, filtered, a solution of tannic acid added until a precipitate was no longer produced; the mixture allowed to settle, poured from the precipitate, filtered; the filters preserved and dried, cut into small pieces, and with the precipitate aforementioned dried, powdered and digested with hydrated sesquioxide of iron. This was dried, exhausted by ether, and the ethereal solution evaporated spontaneously.

The result to the naked eye exhibited an amorphous mass, but with a glass of ordinary power revealed groupings of acicular crystals, insoluble in water, and whose solution in acid by the aid of heat was not affected by either iodohydrargyrate of potassium or phosphomolybdic acid.

On the platinum foil heated to redness no trace of a stain was shown.

Placed upon the tongue in minute quantity a slight bitterness was manifested, and, after an interval, followed by a decided acrimony, extending to the throat, remaining for several hours; this acrimony, however, is probably due to the presence of a slight quantity of a principle resulting from the next experiment. The solution in ether having failed to develop an alkaline principle, strong alcohol was poured through the mass just treated with ether, the same being freed from its traces.

Upon evaporation, groups of crystals formed, a portion of which I here exhibit. There is a slight resinous impurity also present, but not sufficient in amount to embarrass the complete exhibition of the crystalline structure. The solution is simply opalescent by reflected light.

This result gives the characteristic reaction with Mayer's test as well as phosphomolybdic acid, and restores the blue color of litmus paper, which has been slightly reddened by fumes of hydrochloric acid.

Heated on platinum foil to redness it inflames and is dissipated with scarcely a trace of stain.

One-eighth of a grain troy administered to a young cat produced the symptomatic effects ascribed to an over-dose of the drug, accompanied by much frothing at the mouth, and result-

ing in its death. An equal amount of the neutral product similarly administered to a kitten caused no manifest inconvenience. It is therefore to be presumed the principle soluble in alcohol, and which is also dissolved by diluted alcohol and hot water, is the representative principle of the drug, and which, if isolated in quantity, would prove to be its equal in therapeutic power.

I am pleased to be able to state that arrangements are being made to experiment with a large quantity of the bark of the root by one of our most competent associates; and the Association may hope to have a full account of the therapeutic action of this alkaloid at a future meeting—probably the next.

The wood of the root can be safely asserted, from careful experiment, to contain none of the alkaloid.

The full amount of leaves in my possession ($13\frac{1}{2}$ ozs.) were powdered and percolated by strong alcohol to exhaustion, concentrated, strongly acidulated by acetic acid, allowed to rest for a day, filtered and evaporated to a syrupy consistence by gentle heat. To this, alcohol containing one-tenth part of sulphuric acid was added, and digested.

This was neutralized by lime in slight excess, concentrated and allowed to rest, diluted with water and filtered; the precipitate was washed with diluted alcohol, and the liquid decolorized with animal charcoal, filtered and evaporated by water bath to dryness. The residue powdered, exhausted by alcohol with animal charcoal, filtered and evaporated spontaneously. This manipulation should exhibit the presence of the alkaloid in the leaf, should any exist. I have not entirely finished my examination of it, but will communicate to Prof. Maisch the result of the investigation.—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE REMOVAL OF ODOROUS COMPOUNDS FROM ALCOHOL BY PERMANGANATES.

By GEO. F. H. MARKOE, of Boston.

QUERY 22.—What are the practical reactions between the permanganates and alcohol of various strengths and degrees of cleanness; and how far can such reactions be made available for producing deodorized alcohol, cologne spirit, or clean alcohol, upon a small scale, with special reference to the alcohol recovered from fluid extracts, and other Galenical preparations?

It is a well known fact that the permanganates are among the most powerful oxidizing agents at the command of the chemist; and the ease with which they furnish nascent oxygen when merely placed in contact with organic matter, has led to their extensive employment as disinfectants and deodorants. The power they possess of destroying disagreeable odors suggested their employment in the purification of alcohol, and some years ago a patent was granted to Mr. Atwood for a process in which permanganate of potassa was the agent used in producing a deodorized or cologne spirit, which is well known to pharmacists as Atwood's alcohol. The article used by Atwood as a purifier is not the true permanganate of potassa ($\text{KO}, \text{Mn}_2\text{O}_7$), but the so-called commercial permanganate of potassa, which is in reality manganate of potassa (KO, MnO_3), a much less effective oxidizing agent than the permanganate of potassa.

In the following experiments, the writer, in every instance but one, used the officinal permanganate of potassa; and the materials worked upon were unclean alcohols of various strengths, obtained in concentrating the percolates in the preparation of some fluid extracts and syrups. Many more experiments were performed than those detailed in this paper, but it is deemed sufficient to give the results of nine experiments, together with samples of the products. One of Neynaber's Pharmaceutical Steam Stills, of one gallon capacity, was employed for the distillations, and five pints of unclean alcohol were used in each rectification, with 100 grs. of permanganate of potassa.

Exp. 1.—Five pints of alcohol were obtained in following the officinal process for the preparation of comp. syrup of sarsaparilla. By the accidental passage of a small part of the contents of the still during the last part of the distillation, the distillate was rendered quite unclean and tinged with a brown color; it contained 70 per cent. of alcohol, and was strongly contaminated with the mingled odors of Rio Negro sarsaparilla, guaiacum wood, rose, Alexandria senna and licorice root.

Exp. 2.—The five pints of impure alcohol obtained in *Exp. 1* were re-distilled with 100 grs. of permanganate of potassa; the distillation was stopped when four and one-half pints of distillate had collected in the receiver. This distillate contained 84 per

cent. of alcohol, was clear, colorless, and possessed a faint odor of the sarsaparilla compound. It certainly was clean enough to be used in many Galenical preparations. The writer has often seen poorer samples of alcohol in the market.

Exp. 3.—Five pints of impure alcohol were obtained, half from fl. ext. senna, half from fl. ext. senega. The mixture contained 85 per cent. (Tralles) of alcohol; had a very decided odor of senna.

Exp. 4.—The above mixture was re-distilled with 100 grs. of permanganate of potassa previously dissolved in fʒi of water. The distillation was stopped when four and three-fourths pints of distillate were obtained; this was clear, colorless, contained 84 per cent. of alcohol, and was to a very great extent deprived of the odor of senna; more clean than No. 2.

Exp. 5.—Five pints of unclean alcohol of 67 per cent. proof, from fl. ext. scullcap; odor strong of scullcap.

Exp. 6.—No. 5, with 100 grs. of permanganate of potassa, was re-distilled, and distillation stopped when four pints of distillate had been obtained. This was clear, bright, 77 per cent. alcohol, and much improved by the treatment with permanganate.

Exp. 7.—Five pints of alcohol from fl. ext. wild cherry, with 100 grs. permanganate of potassa. Product very clean.

Exp. 8.—Four fluid-ounces of tinct. of buchu were treated with 200 grs. of permanganate of potassa, dissolved in water and filtered. By this treatment it was in a great measure deprived of odor and also of color, as may be seen by comparing the samples of the tincture before and after the treatment with permanganate.

Exp. 9.—Three pints of impure alcohol recovered from the tincture of buchu used in No. 8 were re-distilled with 500 grs. of manganate of potassa (common permanganate of commerce) and two and one-half pints of distillate obtained. This smelled of the buchu nearly as much as the tincture that was simply treated with permanganate without distillation.

From these experiments the writer concludes that the rectification of unclean alcohol with small quantities of permanganate

of potassa is clearly an advantage, as in nearly every case it partially removes the objectionable odor, and in quite a number of instances gives an alcohol clean enough for very many pharmaceutical purposes. None of the experiments made by the writer gave anything like a fine deodorized alcohol suitable for use in perfumery or for delicate preparations, nor does he think that such an alcohol can be produced on the small scale, with the apparatus at the command of the pharmacist, and our present knowledge of the subject.

The reaction of permanganates with organic matter is due to the decomposition of the permanganic acid (Mn_2O_7), which is resolved into hydrated binoxide of manganese, and oxygen,— $\text{Mn}_2\text{O}_7 = 2(\text{MnO}_2) + 3\text{O}$. The oxygen being in a nascent state, instantly combines with the organic matters present and destroys them. In the case of unclean alcohol, the permanganic acid seems first to destroy the odorous principles present, and, if in sufficient excess, to then destroy the alcohol.—*Proc. Amer. Pharm. Assoc.*, 1868.

ON ACIDUM HYDRIODICUM DILUTUM.

BY JOHN A. DUNN.

QUERY 2d.—Is the official process for Acidum Hydriodicum the best that can be practically suggested?

The official process, when managed with skill, yields a good product, but in practice, besides being very troublesome, it has at least one great objection, and that is the use of sulphuretted hydrogen in its preparation. The dispensing pharmacist does not want to contaminate the atmosphere of his store with this odor if it can be avoided. In order to avoid this, and simplify the process, the writer determined to make some experiments with Buchanan's method, hoping by some slight modification to obtain a good and reliable product, and one that would represent that of the U. S. Pharmacopœia in the proportion of iodine. The chief objection to Buchanan's process, in the original form, is that it invariably deposits crystals of bitartrate of potassa on standing; this the writer believes he has obviated, at least to a practically useful extent, and as the results of his experiments in that direction, offers the following modified process:

Take of Iodide of Potassium $209\frac{3}{4}$ grs.

Tartaric Acid, in crystals, $190\frac{1}{4}$ grs.

Dissolve the iodide of potassium in three fluidrachms of distilled water, and the tartaric acid in the same quantity, and filter if necessary; mix the solutions, and set the mixture into ice cold water, allow it to stand for one hour, then filter, and make up the measure to two fluid-ounces.

The formula is based on actual calculation, and each fluidrachm of the solution of the acid represents ten grains of iodine.

Hydriodic acid is readily obtained by the various methods given for its preparation. The greatest difficulty is to preserve it, and it was found impossible to do this without recourse to chemical means. An article on *syrupus ferri iodidi*, published in the *American Journal of Pharmacy* for March, 1868, first suggested the use of hyposulphite of soda for this purpose; it was tried, and found to answer very well. Its use in such small quantities is supposed to be unobjectionable, since it can have no influence upon the medicinal application of the acid. A solution is made containing sixty grains of hyposulphite of soda to the fluidounce of distilled water; of this, five drops was found sufficient to restore a two ounce sample of highly-colored acid, and to keep it so to the present time, a space of three months. How much less of this solution would preserve a newly made acid from change in keeping could not be determined for want of time.

This query may, therefore, be answered in the judgment and experience of the writer, that the officinal process is not the best for medicinal uses, though it may be the best for more strictly chemical purposes, and that a slight modification of the process of Dr. Buchanan of Glasgow is better; and further, that the acid may be either protected or restored by the use of one-third of a grain of crystallized hyposulphite of soda, or less, to the fluid-ounce, provided this be considered unobjectionable.

Brooklyn, Sept. 5th, 1868.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON COMMERCIAL HYDRARGYRUM CUM CRETA

By JOSEPH P. REMINGTON, of Brooklyn, N. Y.

QUERY 1st.—What is the quality, proportion of oxide of mercury &c. in Hydrargyrum cum Creta of commerce, selecting samples recently prepared by manufacturers and others from the dispensing bottles of pharmacists?

Mercury with chalk has lately fallen into disfavor with the medical profession, on account of its variable quality as met with in commerce; and it follows as a natural sequence that the preparation must have a variable action on the economy. Many physicians indeed have given up its use entirely, because vomiting and gastric irritation have been produced, rather than its characteristic mild effects; this is attributed to the oxidation of the mercury.

Several processes have been proposed for its preparation, the oldest one being that of simple trituration. Then came a process for trituration with resin; after the mercury was finely divided the resin was dissolved out with alcohol; this process originated with Dr. Stewart, of Baltimore. Then one in which the material used to facilitate the division of the mercury was starch moistened with water; this process was used by Dr. Mettauer, of Virginia; and lastly, the process of succussion or shaking, first suggested by Mr. W. Hewson, of Augusta, Ga.

The processes most used by manufacturers are the simple trituration and the succussion processes. The first is believed to be most in vogue, and is objectionable principally on account of the time required to thoroughly divide the mercury, and the oxidation caused by its prolonged exposure to the atmosphere. The last process has been successfully carried out on the large scale by the aid of a machine contrived for the purpose by Dr. E. R. Squibb.

This machine consists of two frames, each capable of holding securely a bottle of the capacity of one gallon, moved up and down in guides by means of connecting rods and a crank shaft and pulley.

A full description, with a drawing of the machine, may be found in the published Proceedings of this Association for 1859.

Ten pounds of mercury and two pounds of honey are intro-

duced into each bottle, and the mixture shaken for six hours; thirty-one pounds of precipitated chalk is now made into a uniform paste with four and three-quarter gallons of water, and the shaken mercury is added to the mixture of chalk and water and thoroughly stirred; it is now transferred to a muslin strainer, drained, dried and powdered. The advantage possessed by this process is protection from oxidation, the honey, which was originally added to facilitate the division, envelops the globules, protects them as soon as divided, and the small quantity left in the preparation effectually shields the mercury from change, as will be shown by some experiments further on.

For the purpose of testing the quality of the preparations formed in commerce, samples were obtained from all of the known manufacturers in this country, and one sample made by an English manufacturer, from the San Francisco market, which is principally supplied with the English product. The samples were from Powers and Weightman, Rosengarten & Sons, Charles Ellis Son & Co., Charles Pfizer & Co., Herrings & Co., and Dr. E. R. Squibb, and three samples from the dispensing bottles of pharmacists, in Philadelphia and New York. The process of assay adopted was that proposed by Dr. E. R. Squibb, and published in the American Journal of Pharmacy for Sept., 1857.

Ten grammes of the powder was put in a six ounce beaker and 75 c. c. of distilled water added and mixed with the powder; 40 c. c. of pure acetic acid was slowly added at intervals with stirring. Considerable care is necessary to prevent the mixture from frothing over, hence the expedient of first mixing the powder with water; the carbonic acid is liberated more readily and the bubbles of gas, on account of having a thinner film surrounding them, are broken by the stirrer, and the gas set free with much more ease than when the acetic acid is digested alone with the powder, and a dense solution of acetate of lime formed that envelops the escaping bubbles, which are difficult to break, and if not broken the mixture froths over, and the assay is, of course, lost. The mercury was allowed to subside and the supernatant liquid poured on to a small tared filter prepared for it, the mercury being poured on last; the filter was then washed, dried, and weighed. On examining the contents of the filter after being

dried, considerable matter (which was insoluble in acetic acid) was noticed, supposed to be silica; on this account the weight of the contents of the filter would not represent the quantity of metallic mercury in the preparation; the filter was therefore introduced into a tube, closed at one end; the other end of the tube was then drawn out, bent and broken off; it was so adjusted that the orifice just dipped in water contained in a short test-tube. Heat was now applied until globules ceased to come over; the tube was then heated to redness throughout, and if any globules were noticed at the end of the tube after cooling, they were rinsed through with a little alcohol. The distilled mercury was washed with alcohol to free it from empyreumatic products, dried and weighed.

The filtrate was now highly diluted and hydrochloric acid added in slight excess; the sub-chloride formed was collected on a tared filter, dried and weighed. Sulphuretted hydrogen was conducted through the filtrate from this precipitate until it was saturated; the resulting sulphide was collected on a tared filter, washed, dried at 212° , and weighed. The amount of oxides present was now easily calculated from the weight of the precipitates. Each of the samples was tested for sugar by Fehling's method (vide Fres. Quan. Analysis), but one sample contained traces of sugar.

Under the microscope the difference in the mode of preparation of the samples could be very distinctly seen. In the samples made by the trituration process the chalk was observed to be in a much finer state of division, and the globules, especially in the specimens containing most oxide, were observed to be in irregular coalescent masses, with particles of chalk intermixed. Globules were observed in some of the samples coated with a red substance, and on others a black powder was noticed; this would correspond to the red and black oxides. In the mercury and chalk made by the succussion process the globules were spherical, with clean, bright surfaces, the largest of these globules measuring, by the micrometer, $\frac{1}{100}$ of a millimetre; the globules in the preparation made by trituration were somewhat smaller, the largest measuring from $\frac{1}{200}$ to $\frac{1}{300}$ of a millimetre.

The results of the investigations are tabulated below.

SAMPLE.	PERCENTAGE OF			Sugar.
	Metallic Mercury.	Suboxide of Merc.	Oxide of mercury.	
No. 1. From a manufacturer in Phila.	35.91	0.008	0.372	none
No. 2. " " " " "	35.01	0.08	0.465	"
No. 3. " " dispensing bottle in "	17.37	0.08	14.273	"
No. 4. " " manufacturer " "	32.81	0.01	0.265	"
No. 5. " " dispensing bottle " "	12.41	0.11	25.69	"
No. 6. made in England	29.01	0.03	0.50	"
No. 7. " by succussion	36.30	none	A trace, producing brown discoloration on addition of H.S.	a trace
No. 8. From a manufacturer in N. Y.	29.82	0.01	0.838	none
No. 9. " " dispensing bottle in "	30.32	0.05	1.416	"

It will be noticed that two samples obtained from dispensing bottles contained respectively 14.2 per cent. and 25.6 per cent. of oxide of mercury. As the quantity of mercury originally present could not have been more than 37.5 per cent., (the official quantity), it will be seen that over one-third of the mercury in one, and nearly two-thirds in the other had been oxidized. The samples obtained from the manufacturers contained, in comparison, but little oxide, and from this it is inferred that the change takes place in the dispensing bottle. An expected sample of Hydrargyrum cum Creta made by Dr. Stewart's process was not received, but the disappointment was rendered lighter by the fact that a sample assayed by Prof. Procter, when it was only eighteen months old, gave 22.8 per cent of oxide. This process, however, is seldom if ever used. Three samples of Hydrargyrum cum Creta made by the succussion process were taken, soon after accepting this query, for the following experiment: In one, the powder was simply wrapped in paper, and the package allowed to lie in an exposed place, with access to the sun's rays, heat, moisture, &c. Another portion was put in a bottle and stopped loosely with a cork stopper, as an ordinary pharmacist would be likely to keep it. A third was put in a bottle and the cork sealed, and the bottle secluded from light. At the expiration of eleven months these three samples were examined chemically, and with the aid of the microscope, and no appreciable difference could be detected; this result is attributed to the protecting influence of the small proportion of honey left in the preparation.

Four samples are presented to the Association for inspection. Sample No. 1 is a very fair specimen made by the trituration process; it contains nearly the full amount of mercury, and but .008 per cent. of suboxide and .372 per cent. of oxide, and has about the normal color. Sample No. 2 shows the effect of a very slight proportion of suboxide of mercury on the color; it differs very slightly in composition from the first, but contains .08 per cent. of suboxide. Sample No. 5 is a very bad specimen; the pinkish tinge is very well marked, as it contains 25.6 per cent. of oxide. Sample No. 7 was made by succussion, and shows the characteristic color of a preparation so made—being much lighter in color—containing no trace of suboxide. These four samples are representatives of Hydrargyrum cum Creta as found in commerce.*

—*Proc Amer. Pharm. Assoc.* 1868.

Brooklyn, Sept. 8th, 1868.

ON THE DEPOSIT IN FLUID EXTRACT OF CLOVES.

BY J. F. LLEWELLYN.

QUERY 8th.—What is the nature of the deposit in fluid extract of Cloves on long standing, made by the process of Prof. Procter, reported to this Association? Is it present in the drug, or the result of the oxidation of the oil?

In order to determine whether this deposit exists in the drug or results from oxidation of the oil, I obtained the cloves from the inner portion of a mat opened that day, ground and percolated them the same day. The weather becoming very cold, within a week a deposit of about twenty grains was separated from the percolate from four ounces of the drug; as there was no room for the oil to oxidize, it may safely be inferred that this deposit exists in the drug.

Repeated efforts to sublime it failed, but, when continuously heated, long silky crystals effloresced upon the surface.

* It has long been the opinion of several good pharmacutists, that this preparation, as made by the officinal process, should be abandoned, and a new formula adopted, containing saccharine matter, as in blue mass. It is possible that glycerin might be used in minute quantity.—EDITOR AM. JOUR. PHARM.

Heated to destructive distillation in the bulb of an arsenical tube, there was found a waxy substance in the tube soft and sticky, almost free from odor, having an empyreumatic taste, but free from the warmth of oil of cloves.

The precipitate boiled in solut. carb. soda dissolved but slightly and with difficulty; it would not dissolve when treated in the same manner with water of ammonia.

It dissolved but little in cold or boiling muriatic or nitric acids, whether concentrated or diluted. Some crystals were obtained from the muriatic acid solution having a garlicky taste, like mustard seed, free from its pungency. These crystals deliquesced in a few minutes after being dried by heat.

The deposit itself is tasteless, and seems to have no medical value, as three one grain doses, taken at intervals of an hour, and followed in fifteen minutes by one dose of three grains, giving thus six grains in two hours and fifteen minutes, had no perceptible effect.

As my experiments seem to have determined that this deposit exists in the drug and has no medical value, I carried the investigation no farther.

Louisville, Ky., Sept. 2d., 1868.

—Proc. Amer. Pharm. Assoc., 1868.

ON SYRUPUS LACTUCARII, U. S. P.

BY P. W. BEDFORD.

QUERY 29.—Can any improvement be suggested in Syrupus Lactucarii, U. S. P. 1860?

The syrup of lactucarium prepared by the officinal process, while a good remedy, is an unsightly preparation. Can the finished syrup be as efficacious, and yet more pleasing to the senses? Before speaking of the syrup, let us inquire into the article itself. The variety of lactucarium now found in the stores is that known as German; the English I have not been able to find whenever I have inquired for it. This German variety is now worth from \$9.00 to \$10.00 per pound. According to experiments of E. Parrish and W. C. Bakes (*Am. Journ. Pharm.* xxxii, 227), this variety yields 36 per cent. of extract when exhausted with diluted alcohol, the English variety yield-

ing 44 per cent. Diluted alcohol is conceded to be the best solvent of the active principles of the drug, and all the published formulæ for the last fifteen years have used this menstruum for the preliminary portion of the process. It requires from eight to ten fluid parts to exhaust the drug. On evaporation of the spirit it deposits a large portion of the soluble matter, increasing in bulk as the liquid portion is dissipated; but on addition of a small portion of alcohol to restore it to the strength of diluted alcohol, it is again restored to perfect solution.

The officinal process, after exhausting the lactucarium (one ounce to make half a pint of tincture), directs the liquid to be evaporated to two ounces, and then added to fourteen ounces of simple syrup.

The undissolved portion is held partly in suspension, and in part deposited, requiring shaking to mix it.

The resulting syrup is cloudy with a yellow-red color, unpleasant to the eye, and not very acceptable to the taste. If, when the liquid has been evaporated to the quantity ordered, a little alcohol is added, a perfect solution is effected of a dark transparent appearance; but when sufficient simple syrup is added to make it the requisite strength, it has the same general appearance of the officinal syrup.

The experiments I made were to obtain a transparent syrup which would retain the virtues of the lactucarium as fully as possible. The process adopted in the U. S. P. 1860 for syrup of tolu seems, with a slight modification, to meet the case. I would suggest the following formula:

Lactucarium, one troyounce.

Diluted Alcohol, a sufficient quantity.

Carbonate of Magnesia, sixty grains.

Sugar, fourteen troyounces.

Water, four fluidounces.

Orange-flower Water, two fluidounces.

Rub the lactucarium with a sufficient quantity of diluted alcohol to make a smooth paste, transfer to a conical percolator, adding enough diluted alcohol to obtain half a pint of the tincture. Into a mortar place the carbonate of magnesia and one troy-ounce of sugar, add the tincture and four ounces of water,

filter, evaporate at 160° F. to six fluidounces, add the balance of the sugar, and when nearly cool pour into a bottle containing the orange-flower water, and make up with water if necessary to the bulk of one pint.

This syrup has a dark transparent appearance, with a decided odor and taste of the lactucarium, though partly covered by the orange-flower water, which it is thought is a good addition. In order that it may be examined by those present, I have two samples of the syrup in which the orange-flower water is replaced by water.

In the March number of the *American Journal of Pharmacy* for 1868, pp. 113 and 114, are two papers on the subject of syrup of lactucarium. Samples of the syrups by both processes are herewith presented.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE CONTAMINATION OF HYDROCHLORIC WITH SULPHURIC ACID AND OTHER OXIDES OF SULPHUR.

BY DR. E. R. SQUIBB.

QUERY 31.—Does the addition of metallic iron or zinc to ordinary hydrochloric acid, which contains sulphuric acid as an impurity, decompose the sulphuric acid and liberate sulphide of hydrogen?

In a discussion of the subject of tincture of the chloride of iron, imperfectly reported at page 97 of the Proceedings of last year, the writer stated, as an observed fact, that the escape of sulphide of hydrogen upon dissolving iron or zinc in hydrochloric acid was an indication of the presence of sulphuric acid as a contamination of the hydrochloric acid, and was a good practical test for detecting sulphuric acid. Mr. Maisch spoke doubtfully upon the accuracy of the statement, and in a subsequent conversation expressed a decided conviction that it could not be true. The writer had seen the proposed reaction so often that he had had no doubt upon the subject previous to Mr. Maisch's remarks, and then proposed to try the point by direct investigation. With this end in view the writer proposed the question as one to be reported on this year, and accepted the investigation for himself.

The investigation has been carefully made, and proves that the escape of sulphuretted hydrogen during the reaction in question

is no evidence whatever of the presence of sulphuric acid, and therefore that the statement of the writer was entirely erroneous, and Mr. Maisch was quite right upon the point of accurate knowledge which he raised.

It became then a matter of interest to the writer to ascertain how the error had occurred. This was satisfactorily determined, and may interest the Associação as a part of the history of the hydrochloric acid of commerce.

This acid is often, if not generally, made by the best makers by decomposing common salt in iron retorts by means of sulphuric acid and heat. The gaseous products and vapors from the decomposition are conducted into a series of three or four receivers or Wolf's bottles containing water for the absorption of the hydrochloric acid gas. But the entering tubes of these receivers do not dip into the water as in the ordinary Wolf's arrangement, and the absorption of the gas is therefore slow and passive, only facilitated occasionally by stirring. From the last receiver an ascending series of four or more shallow glass vessels lying upon an inclined plane, and discharging by gravitation one into the other, and the lowest one into the last receiver, are so placed as to receive at the highest end supplies of fresh water from time to time. This water, flowing downward, meets the current of yet unabsorbed gas from the last receiver, and absorbs it all in its progress into the last receiver, which finally contains the best hydrochloric acid of the process, and of the common market. This, when put up for the market, often shows little or no sulphuric acid by the manufacturer's test, which is solution of chloride of calcium. The reaction which occurs in the cast-iron retort from impure materials, and at a high temperature at the close, gives various gaseous products, among which the most common and most copious are the lower oxides of sulphur. It has generally been supposed with reason that small quantities of sulphuric acid also distil over, and that thus the hydrochloric acid becomes contaminated with sulphuric acid. This is doubtless always true with regard to the contents of the first receiver, but is practically impossible to any after the second! Not so with regard to the lower oxides of sulphur, however, some of which are gaseous and all far less easily condensed. These are,

therefore, found in the farthest and coolest receivers, and escape detection by the chloride of calcium test. The hydrochloric acid, which when freshly made contains these lower oxides of sulphur, but no sulphuric acid, will, however, on keeping, soon begin to show sulphuric acid, and finally will contain this acid alone, all the lower oxides being progressively and spontaneously converted into the higher one.

When hydrogen is liberated in a nascent state in the presence of these lower oxides of sulphur, they are all reduced and converted into sulphuretted hydrogen, sulphur and water, leaving the solution comparatively free from sulphur compounds. Thus it happens that when freshly made hydrochloric acid, free from sulphuric acid, but containing the lower oxides, is used for making the chlorides of iron or zinc, the resulting chlorides will be free, or comparatively so, from sulphuric acid and sulphates, while a portion of the same acid, if kept long, will contain sulphuric acid and be comparatively free from the lower oxides of sulphur. Hence the escape of sulphuretted hydrogen during the reaction with these metals is an easy practical test for the lower oxides, but not for the higher.

This best grade of hydrochloric acid is often not accessible to the writer, unless he waits for it to be made, and then it is received quite fresh and new, and is at once used for making the chlorides of iron and zinc. It then gives off sulphuretted hydrogen so copiously that it is necessary to make the solution out of doors, and yields chlorides which are practically, though not absolutely, free from sulphates. Portions of the same lot of hydrochloric acid stored, and used subsequently, have been found to contain largely of sulphuric acid and nothing else. Hence the conclusion that nascent hydrogen decomposed sulphuric acid in this reaction and thus yielded the floating sulphur, and the escaping sulphuretted hydrogen was accepted on very insufficient grounds and erroneously put forth.

All of which is respectfully submitted in answer to Query No. 31.

Brooklyn, August 14th, 1868.

—*Proc. Amer. Pharm. Assoc., 1868.*

ON SUPPOSITORIES.

BY CHARLES L. EBERLE.

QUERY 30th.—Is there a rapid method for making suppositories whereby the use of a hardening ingredient in connection with cacao butter will not be required?

When suppositories were first re-introduced, and became popular with the medical profession of the day, it was more or less difficult to procure at all times a good sample of cacao butter, and so much of that furnished by the jobber was adulterated with fats having a lower fusing point than its ordinary application suggested, and required uniformly the use of a hardening ingredient when suppositories were to be prepared.

The best samples, however, now furnished for pharmaceutical use are not open to this objection, and in our hottest summer months can be handled with impunity, remaining firm and dense under the necessary manipulation.

No other substance or combination can well be substituted for it in this peculiar application of medicine, or at least none has yet been introduced claiming to supercede it.

The peculiar opinions of different pharmacists regarding the amount of hardening ingredient necessary to be added to cacao butter varying with the individual, I have not found two to accord perfectly.

While Mr. Markoe, in the climate of Boston, uses a proportion of one-third spermaceti, Mr. J. B. Moore, of Philadelphia latitude, whose paper in the *May Journal of Pharmacy* is the most valuable yet contributed on this subject in its practical application, (and whose samples on exhibition at this meeting are perfect specimens of art,) makes no admixture from October to June, thereafter adding a small portion of Japan wax.

The supposed effect of these small additions has been much over-estimated; no appreciable amount of time in hasty preparation is gained by the combination of wax until one-fifth is added, neither with paraffine, spermaceti or the Japan vegetable wax. Cacao butter, at ordinary temperatures after a time, sets in the mould and may be removed by its own gravity; the admixture often aggregates in a few days to a condition requiring more than animal heat for its fusion, and have been complained

of by the physician for producing local irritation or being ejected from the rectum before disintegration.

There are occasional prescriptions of medicinal ingredients where the *ol. theobromæ* seems to require an addition, and it can properly be made where a large amount of soft medicinal extract is to be incorporated, or a solution of subsulphate of iron, for instance; but the dry powders, vegetable or mineral, need no assistance; they contribute to the hardening of the butter, and in the case of oxide of zinc, carb. of lead, iodides of lead and cadmium, produce rapid aggregation.

The object of using suppositories is only gained where they fuse slowly, at animal temperature.

Mr. Markoe moulds his mixture of wax and butter and has the suppository unmedicated on hand. When the prescription arrives for their preparation, he remelts the number required, and, after medication, remoulds, thus doing away with the trouble of weighing the excipient, and insuring exactness in result—a commendable plan, as you will observe.

The greatest annoyance in the preparation of these appliances occurs when the pharmacist is called at night from his bed, the applicant impatient, weather hot, store close, and flies troublesome, to furnish a dozen or more. There is no supply of ice in his soda water apparatus, cold spring water is not to be had in the cities, and would not largely facilitate their cooling in the mould. The temptation is certainly great to add a large proportion of foreign excipient, and I am aware it is often done.

To reach such victims, who, regardless of a trifling expense, would welcome the departure of his customer, I offer a plan which answers well in practice: Procure a tin box eighteen inches long, six inches broad and six in height, arrange a cover of fine wire gauze, prepare a rest for suppository moulds made of wires crossing at right angles and fastened at each intersection; a ledge of tin is placed on the sides of the box, upon which the wire frame rests. One end of the box, four inches from the top, is perforated three-eighths of an inch in diameter, to admit the discharging tube of an atomizing apparatus. All things being adjusted, the fluid mass is poured into the moulds at the

opposite end of the box from that perforated, or at such nearer position as may be requisite, the gauze cover placed in position and a spray of rhigoline, ether, or a mixture of alcohol and ether discharged against the offending moulds.

The happy pharmacist, satisfied with the rapid cooling, exclaims, "hang the expense," pours from the box what is condensed of the vaporizing fluid and dismisses his customer, alas! too often to again have his blissful dreams disturbed before the advent of a morrow's sun.

Suppositories should always be passed over the counter with direction to keep in a cool place when not wanted for use, and to be then handled quickly. Servants should also be cautioned against placing the bottle in the pocket, or immediately contiguous to the person.

A great need is felt of a *low-priced* suppository adjuster. I am not aware that one exists, but believe the invention would meet with ready sale.

Shaved ice answers better for cooling than broken, or ice and water, a better mixture is shaved ice and salt.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE RELATIVE PROPORTION OF DIGITALIN PRESENT IN AMERICAN AND EUROPEAN DIGITALIS.

BY SAMUEL P. DUFFIELD, PH. D.

Last year I asked an extension of Query No. 34, viz. :

Do the leaves of the *Digitalis purpurea* grown in the United States yield less digitalin than the European plant? and is the alleged inferiority of the former, if this be true, due to a deficiency of this principle?

My reasons for asking an extension were that I had not, satisfactorily to myself, blocked out a method of procedure which would answer it best. I had designed estimating the quantity of the alkaloid digitalia by the proposed method of Mayer, by precipitation by means of iodohydrargyrate of potassium, or by Rudolph Wagner's method of iodine in a solution of iodide of potassium. The more I pondered, the more satisfied I became that that process would not give a satisfactory answer, as we have not yet investigated the combinations of the alkaloid with

these reagents, and a good part of it would have to be (on my part) assumption. We have, however, given us in the Dispensatory a method for the preparation of digitalin which is simple and practical. It is true it does not give us the pure alkaloid, but it gives it in a state pure enough for all pharmaceutical purposes, and I assumed therefore that the digitalin meant in query 34 was the "digitalinum" of the [British] Pharmacopœia.*

I accordingly wrote to the house of W. H. Schieffelin & Co. to procure me three samples of digitalis, such as came into the market and were usually sold to druggists. In fact, I desired the three representatives of the goods as they were usually found in the market.

They sent me three varieties:

No. 1. Leaves. *Folia digitalis*, from George Allen, London, handsomely packed in glass.

No. 2. The ordinarily packed and pressed digitalis of the Shakers of Mt. Lebanon, containing the small stalks.

No. 3. 1 lb. paper package digitalis, German. Name of grower or packer unknown.

The prices ranged as follows:

1 lb. *Fol. digitalis*, English, glass jar, \$1.50.

1 lb. " German, .15.

1 lb. p'kge. American grown digitalis, .30.

French variety could not be obtained.

The process adopted was essentially that of the Pharmacopœia, being a slight modification of Wittstein's method.

One pound avoirdupois (7000 grs.) of the drug was reduced to a powder of No. 60 fineness, and percolated slowly by one gallon three fluid-ounces alcohol, gravity .835, mixed with two drachms of acetic acid. It was percolated cold. When the percolation was finished the spirit was distilled at water-bath heat, the extract treated with four fluid-ounces distilled water containing one-half drachm of acetic acid, and digested with one drachm animal charcoal (granulated), and filtered. Filtrate was diluted with distilled water, so as to measure a pint in bulk. Ammonia was now added almost to neutralization, and the fluid precipitated with 80 grains of tannic acid dissolved in three fluid-ounces of distilled water.

* Digitalin contains no nitrogen and is not an alkaloid.—J. M. M.

This precipitate was washed with a small quantity of water mixed with one fluid-ounce of alcohol, and carefully triturated in a mortar with one drachm of litharge. The mixture was poured into a flask of one pint capacity, and mortar rinsed with fresh spirit several times, pouring the rinsings into the flask until four fluid-ounces were obtained. This was heated up to 160° temperature, and maintained at that point for one hour. Animal charcoal one drachm was added, solution was filtered, spirit recovered by distillation, and remaining solution evaporated in a chemist's drying oven, at a temperature which did not exceed one hundred and fifty degrees.

The respective yields were as follows :

One pound of English digitalis yielded 63.60 grains.

“ American “ “ 65.01 “

“ German “ “ 56.50 “

This would equal for 1000 parts—

English digitalis, 9.08 grains.

American “ 9.30 “

German “ 8.07 “

The difference between the American and other varieties I can only account for by assuming that the small stalks which are packed with the leaves in the American sample contain more of the alkaloid than the leaves in proportion. I can prove this to be the fact from my experience with henbane stalks and leaves. But as reasoning by analogy is at best insecure, and often proves fallacious, I simply give you the facts and allow you to draw your own conclusions.

I am compelled to claim for our home-grown digitalis, if rightly dried and gathered, *superiority* instead of *inferiority*, at least reasoning from the samples. The question with me has of late often arisen, whether it is well to reject the stipules and stems; whether we do not lose in so doing what contains a greater amount of alkaloid than the leaf. This is a question which would bear investigation. Both my English and German samples were simply the *leaves*, while the American was leaves and stalks, such as the Shakers usually put up.

Detroit, Sept. 1, 1868.

—*Proc. Amer. Pharm. Assoc., 1868.*

ON THE PREPARATION OF PYROPHOSPHATES OF IRON.

BY SAMUEL P. DUFFIELD, PH. D.

QUERY No. 26.—It is found that the process of the Pharmacopœia for pyrophosphate of iron yields a preparation which it is sometimes impossible to scale. Can a better process be devised?

Pyrophosphate of iron rendered soluble by means of citrate of ammonia, was first proposed, by M. E. Robiquet, to the Academy of Medicine at Paris. As prepared by him the gelatinous precipitate was dissolved in citrate of ammonia solution, and a syrup was made from this solution. This process was improved by Prof. Procter; the result was also a syrup. The formula, as it occurs at present in the United States Pharmacopœia, is that of Dr. E. R. Squibb, and exhibits the finished product in scales.

The pharmacopœia process is to ignite the 2NaO , HO , $\text{PO}_5 + 24\text{HO}$, thereby converting it into the 2NaO , PO_5 . This is dissolved in water and mixed with solution of tersulphate of iron, at a temperature not exceeding 50° Fahr.; the resulting pulpy precipitate washed thoroughly and dissolved in solution of citrate of ammonia.

This process I have been disappointed in; it scales but imperfectly, and sometimes not at all.

I am not alone in my complaint; several have tried the same process and failed to get satisfactory results. After having tried faithfully for four times this process, I devised a slight modification, which gave me the most satisfactory results, never failing once to scale handsomely.

The process: Take of the magma obtained from $8\frac{1}{2}$ oz. of pyrophosphate of soda (which is about $6\frac{1}{2}$ times as much by weight):

Aqua ammoniæ,	.	.	.	.	1 pint.
Citric acid,	.	.	.	.	6 oz.

Mix the pyrophosphate of iron (the magma) with the ammonia and digest at a gentle water-bath heat for 6 to 8 hours; then *gradually* add, constantly stirring, the 6 oz. of citric acid, dissolved in two pints of distilled water, *until* the ammonia is *neutralized* and the precipitate dissolved. Filter or decant, if

necessary; evaporate to the consistency of a thick syrup; paint on glasses and seal as usual. The change which takes place on the addition of the ammonia is different from the appearance produced by the addition of citrate of ammonia solution.

In the case of the addition of aqua ammoniæ, the magma turns, in a few hours, of brick-red color; and in the case of the addition of citrate of ammonia solution, it dissolves to a green color, similar to the iodide of iron liquor, before adding the syrup.

If now you add the citric acid to the brick-red colored magma, it gradually dissolves and becomes a greenish color by transmitted light, and dark-brown, almost black, when concentrated, by reflected light.

That there is a different apportioning of elements produced by the modification no one can deny. In the first you have pyrophosphate of iron in solution by means of citrate of ammonia, a mixture of neutral salts. In the second you have, on the addition of ammonia, pyrophosphate of ammonia and sesquioxide of iron, which latter exists in a free state. On the addition of the citric acid it unites with the sesquioxide of iron, forming the citrate of the sesquioxide mixed with the phosphate of ammonia. I think from this it will be seen that the composition is changed, the iron in the Pharmacopœia formula (Squibb's,) existing as a pyrophosphate; the iron in my modification existing as a citrate of the sesquioxide.

As the Pharmacopœia Committee consider their preparation an intimate admixture of ferruginous and ammoniacal salts, I do not consider I have *violated* the U. S. P.

Detroit, Aug. 5, 1868.

—*Proc. Amer. Pharm. Assoc., 1868.*

ON THE USE OF YELLOW WAX IN OINTMENTS.

BY FERRIS BRINGHURST.

QUERY 35.—It has been asserted that yellow wax is better than bleached wax for the preparation of Ceratum and Unguentum adipis. If this be true, what principle in the crude wax possesses this property, and for what extent of time may its conservative power be relied on?

In reply to query 35th the writer, to whom the matter was referred, regrets his inability, either from the writings of others or his own experiments, to say with certainty to what principle yellow wax owes its preservative properties; but inclines to the belief that it is balsamic, containing benzoic or some analogous acid.

To give some idea of the length of time for which the conservative power of yellow wax may be relied on, the writer would ask attention to the samples of cerates which accompany this paper.

No. 1. Ceratum adipis, made with good yellow wax January 25th, 1867, and now nearly twenty months old, is in a good state of preservation.

No. 2. Ceratum adipis, made with Phillips' strained yellow wax, March 11th, 1867, now about eighteen months old, is in a good state of preservation.

No. 3. Ceratum adipis made with Phillips' bleached wax, March 11th, 1867, now about eighteen months old, bears decided evidence of rancidity.

These samples were all made from the same lot of lard, have been kept partly in the cellar and partly on the shelves in the store, exposed to the same temperature that the cerates of the shop are required to stand; generally covered to keep out dust, but always together, and hence under precisely the same circumstances.

The writer would here state that in former times, when using bleached wax, he has often been obliged to throw away portions of simple cerate as unfit for use on an inflamed surface, but that since using the yellow wax (now about four years) no such occasion has arisen.

In the preparation of cold cream, which is required to be particularly white, the writer continues the use of bleached wax; but in making glycerin cream yellow wax is used, and, while the latter keeps perfectly well, the former sometimes bears evidence of rancidity perceptible over the perfumed waters and essential oils in its composition.

In making ceratum plumbi sub-acetatis, or Goulard's cerate, which is perhaps the most difficult to preserve of the officinal ce-

rates and ointments, the writer uses yellow wax, and finds it to keep much better than when made with white wax, though there is one slight objection to its use, which is the change of color, at least in the surface, from yellow to white, partly from a partial decomposition of the sub-acetate of lead and deposite of carbonate. Of course the same decomposition occurs with the use of white wax in this cerate, but not the change of color.

Samples 4, 5 and 6 will show to some extent the difference in the use of yellow and bleached wax in the preparation of this cerate.

In conclusion, the writer would remark that he conceives that in bleaching wax not only is the balsamic or preservative principle destroyed, but that during the process rancidification is started in the wax; and that as old vinegar or "mother" superinduces the acetous fermentation in cider, so bleached wax renders rancidification more certain and rapid in all cerates and ointments in which it is used.

—*Proc. Amer. Pharm. Assoc.*, 1868.

ON THE SALTS OF CONIA.

BY GEORGE C. CLOSE.

QUERY 33d.—Conia has been recommended as a therapeutic agent, but is liable to alteration from atmospheric oxygen. As the salts of conia appear to be permanent and are odorless, why may not some of these be substituted for the alkaloid?

The assertion in the query that the salts of conia appear to be permanent, is contrary, I believe, to the authorities on the subject, except with regard to the muriate, which Prof. Wertheim asserts to be crystallizable and not in the least deliquescent. The method which he suggests for making the muriate is the combining the vapors of the two substances directly. This method, to be successful, would require a larger quantity of the conia than I could afford to use, as the cost is eight dollars for what purports to be an ounce of the article.

I succeeded in making a crystallized muriate by dissolving 30 grs. of the conia in 2 fluidrachms of dilute muriatic acid, previously diluted again with its bulk of water, and evaporating the solution by means of a water bath.

Heat is developed while dissolving the conia, and white vapors are evolved at first, which, even when the mixture is made in a well corked bottle, will sometimes escape partially.

Some of the crystals obtained by the evaporation of the mixture were exposed for several weeks in an open capsula. They became alternately wet and dry, according to the state of the weather. From this I infer that they are hygrometric but not deliquescent.

I swallowed half a grain of the crystals which had been so exposed (dissolved in water), without apparent effect. I then took one grain, which produced the characteristic effects of the conia to such an unpleasant degree that I should be loth to repeat the dose. I am far less susceptible to the action of conia than many persons. This seems to show that the salt will retain its medicinal properties after several weeks' exposure.

I did not succeed in obtaining a crystallizable salt with sulphuric, citric or oxalic acids.

The conia used was made by Merck. This appears to be the only kind in market. Its quality is not uniform, as in some instances it will not all dissolve in the dilute acid, but an oily residue is left.

I presume the muriate of conia might be made directly from the fresh plant or fruit at less expense than the conia, and have no doubt but that it would be far more convenient and reliable for medicinal use than the latter.

I do not claim to have exhausted the subject of the query, and shall be very glad if some member who has more skill, more apparatus and more money will take it up and investigate it more thoroughly than I have done.

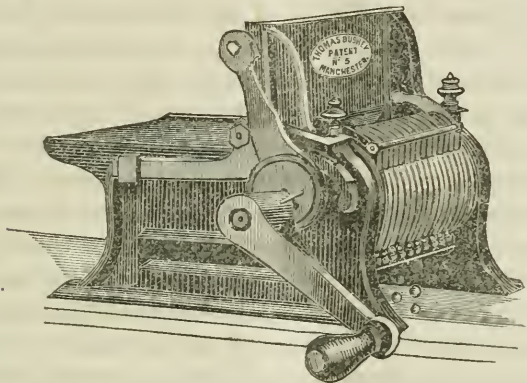
I present a sample of muriate of conia, probably not quite pure, but sufficiently so for practical purposes.

—*Proc. Amer. Pharm. Assoc.*, 1868.

BUSHBY'S PILL MACHINE.

ONE of the most important inventions directly affecting chemists and druggists which has come before us for a long time, is that which is here represented. The wearying work of pill-mak-

ing, which is to some druggists the one horrible skeleton which haunts their business life, has induced many attempts to construct a simple machine possessing sufficient intelligence to convert a large mass into equal-sized and properly-shaped pills. A machine for this purpose has, we believe, been in use for many



years at a few of those establishments—such as Holloway's and Cockle's—where pills are turned out by the hundred-weight. But the great expense, the unnecessary elaborateness, and, we may add, the many imperfections, of this machine, have altogether prevented its general introduction among the druggists of the country. We had heard of Mr. Bushby's invention, and had much pleasure, during a recent visit to Manchester, to take advantage of the opportunity to examine it for ourselves. Its first recommendation is its exceedingly pretty appearance. Mounted on a mahogany stand, it forms, when not in use, a very attractive object for the counter, and we are inclined to think that a little mysterious machinery about a chemist's shop often adds to his reputation as a scientific man, and helps to maintain the dignity of the profession. The invention and perfection of this machine must have cost Mr. Bushby a vast amount of thought and labor; but we believe the general verdict of the trade will in the end reward him for his perseverance. The difficulty of adapting a single machine for the purpose of going through the several processes of rolling, cutting and rounding at one and the

same time, and by one motive power, has been most completely overcome.

The "pill mass" is first passed between two plain rollers, fitted with adjusting screws, to form it into a sheet of the thickness required for the size of pill to be made, the thickness of the sheet necessarily determining the size of the pills. The sheet then passes to the table of the Pill-machine, where it is caught by a self-acting feeding apparatus, bringing a portion under the edge of a knife, which cuts off a strip or bar, such strip falling or being carried by the knife between semicircular grooves, which, revolving rapidly, cut and form the strip into pills. The great economy of time will be apparent. The sheet being unintermittently advanced as each strip is cut off and formed into pills, another instantly follows, the shower of pills being continuous as long as the necessary sheet is supplied. The pills formed are spherically rounded, and by care in forming the mass into sheets of the required width, which is provided for on the plain rollers, a great quantity may be made without the waste attending the old process by hand. About one thousand pills per minute may be made by the machine. It can, however, be made capable of making much greater quantities if required. The machine is not liable to get out of order, the workmanship being good and the mechanism simple—its great merit.

Pill-making will be, with this apparatus, no longer a disagreeable part of the pharmacist's duty, but a pleasant recreation, and if he has any young children, the working off of a two or three pound mass into pills could hardly fail to prove "a constant source of amusement," as the toy-dealers would remark, the only drawback being that, like fireworks, the fun would be all over in a few minutes. We commend his machine because it appears to us excellently adapted for the purpose, and we should like our practical readers to take the first occasion which presents itself of examining the merits of the invention. Several testimonials which Mr. Bushby has already received from competent judges confirm the favorable opinion we have expressed. —*Editor Chemist and Druggist, London, November 14, 1868.*

SENNA.

BY THOMAS B. GROVES, F.C.S.

What I have to say about this interesting article of *Materia Medica* will be confined to its chemical history, ancient and modern, and will include an account of some attempts I have recently made to set at rest disputes as to the nature and properties of its active principle.

A comparison of the statements of authors of repute respecting this active principle will show at once the necessity there existed for bestowing further labor on the subject. The analyses given by Pereira comprise one by Braconnot of the watery extract of Alexandrian senna, one by Lassaigne and Fenuelle of senna leaves, and one by Fenuelle of senna legumes. It will be sufficient for my purpose to quote parts only of these analyses. Thus Braconnot finds in 104.2 pts. of watery extract of Alexandrian senna 53.7 pts. of the bitter matter of senna; as senna is not bitter when unmixed, it is pretty clear that Braconnot operated on a sample of senna containing the bitter leaves of *Cynanchum Argel*, without making allowance for the fact. He mentions also 31.9 per cent. of reddish-brown gum—a most indefinite term. On the whole, it may be said that the analysis is perfectly useless.

Lassaigne and Fenuelle give a qualitative statement only, at the head of which figures cathartin, a principle (?) found also in senna legumes by Fenuelle. This substance is described as being yellowish-red, uncrystallizable, with a peculiar odor and a bitter nauseous taste, very soluble both in water and alcohol, but insoluble in ether. Its aqueous solution is precipitated by infusion of galls, diacetate of lead, etc., etc. Three grains caused nausea, griping and purging. Its preparation is thus effected. To a filtered decoction of senna add acetate of lead, filter, remove the excess of lead with sulphuretted hydrogen, filter and evaporate to an extract, which exhaust with rectified spirit; again evaporate to an extract, add a little sulphuric acid to remove potash, present in combination with acetic acid, and finally purify *secundum artem* from traces of lead or of sulphuric acid if necessary. This substance, which I need scarcely say is not worthy of the

name of "active principle," inasmuch as it is quite destitute of "activity," and is not a "principle" but a complex mixture, long passed muster as the so much desired and so often missed senna cathartin; its discovery was announced in 1821. Bley and Diesel pronounced it to be a mixture of resinous and extractive matters; they might with truth have added "derived partly from senna, partly from *Cynanchum Argel*."

In 1845 a prize of 500 francs was offered by the French, for the best essay on the chemistry of senna, but an answer not being forthcoming, the offer was renewed in 1857, the prize being increased to 1000 francs—still no response.

In the same year, however, Martius gave the subject his attention, and pronounced an opinion that senna owed its activity to chrysophanic acid, a body of very stable constitution, and in that respect very unlike what might have been expected from senna. Its hitherto acknowledged sources were rhubarb and the lichen *Parmelia parietina*. Martius was controverted by Sawicki, who urged the little solubility of the acid. Wiggers, however, came to the rescue with a suggestion that the combination of the acid with certain bases would give it the required amount of solubility in water.

In this there is a somewhat near approach to truth; Martius may be said to have "burned," but he did not "touch" the coveted principle.

Before proceeding to the analyses of senna, published within the last few years, I will refer to the notions of the ancients as to the proper modes of preparing senna for administration. It will be found that our remote predecessors were not deficient in the power of observation, whatever what might have been their deficiencies in scientific knowledge; that their practice if not their theory was correct. Thus the Arabian physicians held that long boiling impaired its activity, so did Culpepper, and cautions accordingly. Heerlein, a modern writer, denies this, but not upon satisfactory grounds. Its purgative power is said by some to be increased by combining with the senna any simple bitter. The infusum amarum purgans and the mist. gentianæ co. owe their origin probably to this idea. It might even throw light upon the practice (which undoubtedly was not of modern invention) of

“adulterating” Alexandrian senna with the leaves of *Cynanchum Argel*. As the latter are now known to be destitute of purgative power, and purely bitter, it would be interesting to ascertain the comparative potencies of pure senna, and of that mixed with cynanchum. Should it turn out that the admixture really effects an improvement of quality, we may perhaps, without great stretch of charity, ascribe the systematic admixture of the two leaves to a desire to improve the article. Cheapen it, it does not. It has been remarked with wonder by travellers, that the senna leaves are quite as easy obtainable as those of the plant used presumably for its sophistication.

Senna was invariably exhibited in a watery vehicle, and this is as it should be; strong spirit fails altogether to extract its active principle, notwithstanding Christison’s statement to the contrary.

Among the more noteworthy examinations of senna of recent date are those of Robert Rau, of Bethlehem, Pennsylvania, and of Professor Dragendorf and Herr Kubly, of Dorpat.

Rau’s results have since been disproved, but as his experiments present many points of interest I will shortly enumerate them. The paper will be found *in extenso* in the *American Journal of Pharmacy* for 1866. He commences by asserting the inertness of the resin extracted from senna by the use of alcohol, and in that is perfectly correct.

The active principle being supposed still to remain in the residue of the operation, the senna is extracted next with cold water, and to the infusion diacetate of lead is added in excess. The filtrate from the precipitate thus formed is freed from lead by sulphuric acid, and being then evaporated, the sweet extract was found destitute of purgative action. He found the same inertness in that part of the extract soluble in spirit—the so-called cathartin of Lassaigne. The yellow lead precipitate was next examined. When dried and boiled with alcohol it yielded a substance of a deep yellow color which was darkened by alkalis. It consisted of two resinous bodies, chrysoretin, etc. The residue suspended in water was decomposed with sulphuretted hydrogen, and furnished only a “*tasteless, gummy substance of acid reaction*,” that seemed unworthy of further notice.

The dried sulphide boiled in alcohol yielded a resinous, very nauseous substance insoluble in water, soluble in alcohol and in ether.

The dried sulphide boiled in ether gave a crop of interlaced acicular crystals of dirty white color, at first tasteless, afterwards persistently bitter and nauseous. Five grains purged actively five hours after taking. A second quantity of crystals was obtained from the liquid by treatment with animal charcoal, and boiling as before in ether. He claims for this substance the position so long usurped by the pretended senna Cathartin of Lassaigne and Fenuelle, and names it "Sennin."

The characteristics of this new "Sennin" are thus described:—It is insoluble in water, cold or hot, insoluble in acids, insoluble in alkalies, insoluble in cold alcohol; soluble, to some extent, in hot alcohol and in ether, but especially soluble in chloroform. All this being true, how on earth could the sennin have been induced to leave its nidus by the mere action of cold water? This consideration determined me on repeating the experiment, but fortunately I was saved the trouble by the announcement of Herr Kubly, who has carefully trodden the same path as Mr. Rau, but with greater discernment, that the "dirty-white interlaced acicular crystals" were in point of fact neither more or less than sulphur. It must, however, be remembered to Mr. Rau's credit, that he gave the finishing blow to the pretensions of Lassaigne's Cathartin, and also proved the incorrectness of Martius' assertion respecting chrysophanic acid—it exists in senna in very minute proportion only.

My own experiments were commenced in 1862, by an examination of the precipitate that so invariably collects at the bottom of old samples of Liquor Sennæ. I found it to consist of phosphate and sulphate of lime combined with resinous acids, some of which were soluble in alcohol, some in ether, some only in alkaline solutions. The whole treated with liquor potassæ in considerable excess, dissolved, producing a rich brown color. From the filtered solution hydrochloric acid precipitated the resins—brown in color when pulverulent, black when fused into masses. Eight grains of this substance taken for a dose produced no effect whatever on the bowels. As similar resinous

acids were not precipitable from liquor sennæ by acids in the cold, I at once suspected that they derived their origin from the slow decomposition of an unstable glucoside. Another supposition that they were products of oxidation was negatived by the fact, that the precipitation occurred in perfectly closed vessels. An examination of liquor sennæ presented the following reactions:—It was acid to test-paper. When treated in the cold with weak hydrochloric acid it did not deposit anything material before ten or twelve hours had elapsed. Boiled with any mineral acid it deposited a considerable amount of dark resin, leaving the fluid nearly colorless. Comparative tests before and after boiling with acid, with Fehling's liquor showed that the proportion of glucose had been increased by that treatment. Neutral acetate of lead threw down an abundant pale precipitate. No precipitate of consequence was obtained by using either tannin, ammonia, or iodo-hydrargyrate of potash. Basic acetate of lead applied to the filtrate from the neutral acetate, produced an abundant orange precipitate, leaving the liquid to all appearance destitute of any active principle of senna. This lead precipitate, treated with cold dilute sulphuric acid, yielded a dark solution, that when boiled with a mineral acid yielded a resinous precipitate, and a disagreeable smell of stale senna. The lead was therefore in combination with the glucoside, for which I was in search. Guided by these results, my experiments were resumed on a larger scale.

A quart of Liquor Sennæ, that within a fortnight of its preparation had commenced to deposit resin, was neutralized with ammonia. The precipitate obtained consisted mainly of phosphate of lime.

Neutral acetate of lead being added in excess to the filtrate a precipitate was obtained, consisting of certain organic acids in combination with oxide of lead. This precipitate washed, suspended in water, and decomposed by sulphuretted hydrogen furnished a brown acidulous liquid, which was decolorized to some extent by animal charcoal, and then neutralized with baryta water. Of the baryta compounds one part was soluble, the other not. The insoluble part was treated with sulphuric acid, which eliminated the organic acid. The soluble part was reprecipitated

with acetate of lead, and decomposed with sulphuretted hydrogen. The acids thus obtained were compared in their reactions with the better known organic acids, but could not be identified.

As I was unable to devote to the subject sufficient time for complete examination, and the results were not likely to be of pharmaceutical interest, I handed it over to Dr. Attfield, with a request that he would put one of his senior pupils upon it, if he thought the subject worth following up. I thought it not unlikely that the inquiry might result in filling up some gap in a homologous series, and thus be of scientific interest. I understand that the subject is in the hands of the senior Bell Scholar.

The addition of diacetate of lead to filtrate No. 2, produced a copious orange precipitate, which, when washed and diffused through water, was decomposed with sulphuretted hydrogen. The brown acid liquid that resulted was warmed, neutralized with ammonia and evaporated to dryness; redissolved in water, spirit of wine was added till a precipitate began to form. This precipitate consisted of sulphate of ammonia, in small quantity. The liquid poured off from this was treated with a larger dose of spirit, when the greater part of the glucoside acid, combined with ammonia, fell to the bottom in a treacly mass. This looked so little like an active principle, and was so perfectly devoid of taste or smell, that I at once jumped to the conclusion that it could not be the thing I wanted. I therefore passed it over, as did my forerunner, Mr. Rau, without administering one dose even, and prosecuted my research in the liquid, from which, in combination with lead, it had been precipitated. The results, however, were purely negative.

I then macerated 33 ounces of Alexandrian senna leaves (unpicked) with 5 pints of methylated spirit, and, at the end of ten days, pressed and filtered. The spirit, a little water being first added to the liquid, was evaporated, and the resinous oily substance removed carefully from the aqueous fluid it overlaid. It was apparently destitute of medicinal activity—the bitterness of the tincture being concentrated in the fluid. Diacetate of lead added to this produced an orange precipitate of certain coloring matters, of no pharmaceutical importance. The filtrate, freed from lead, was still bitter, but became less so on evaporation.

During the process a dark-colored resin separated. From the strong solution a little rectified spirit precipitated sulphate of ammonia and other salts, and then, twice its volume of ether being added, a dark-colored sweet extractive was thrown down. The filtrate, after evaporation, etc., was a second time so treated, and a second crop of extractive obtained.

The ether-spirituous solution shaken with water, yielded to it a bitter substance of dark color and not unpleasant flavor. In doses of 5 grains it had no effect whatever on the bowels. The extractive was also inoperative. The bitter was doubtless derived from the *Cynanchum*, of which it may be said to be the active principle.

The marc from which the spirituous tincture had been pressed was now exhausted with water, and, from the infusion, purified from the senna acids by acetate of lead, the glucoside acid was precipitated with diacetate of lead. This compound having been decomposed with sulphuretted hydrogen and ammonia added, the glucoside was precipitated in combination with ammonia by rectified spirit. It remained now as a last resource to try its medicinal effect; not with much hope of result, but still acknowledging the possibility of this tasteless and apparently inert substance being so modified in its course through the system (bearing in mind also that senna acts only indirectly on the bowels), as to enable it to produce the cathartic effect I desired to experience. On taking a dose of 5 grains, I was pleased to find that some disturbing effect was produced. A repetition of the experiment enabled me to decide that the glucoside was the active principle of senna. Flattering myself that I had made a discovery of something not hitherto announced, I proceeded to prepare the glucoside by precipitating it directly from a concentrated infusion of senna, in combination with the bases—lime, magnesia, add potash, with which it is naturally associated. I found that the first precipitate was much contaminated with the senna acids in combination with lime, and was of little virtue; the second precipitate was more active, and of this 4 grs. acted fairly as a purge.

Just at this time I became aware of the existence of the paper on senna by Dragendorff and Kubly. It was pointed out to me

by our President, who kindly sent me a *résumé* of the work, translated from the German *Quarterly Journal of Practical Pharmacy*. It was now evident that, as to the facts I had laboriously discovered, I had been forstalled by the German professors. I therefore abstained from a minute examination of the glucoside, and devoted myself to attempting its preparation by a *cheap* and easy method adapted to the purposes of pharmacy. I must confess that my results hitherto have not been sufficiently good to warrant my enlarging at present upon my numerous experiments in that direction. I will give shortly, in conclusion, Dragendorff's results, adding a few remarks of my own on the pharmaceutical preparations of senna.

The glucoside acid, that now is known to confer on senna its purgative property, has been named by its discoverers Cathartic acid. Its formula has been stated as $C_{180}H_{96}N_2SO_{82}$, which, if true, accounts for its extreme instability. It is insoluble in water, strong alcohol, and ether, but enters readily into watery solution when combined with alkaline and earthy bases. Its ammonia salts give brownish flocculent precipitates with salts of silver, tin, mercury, copper, and lead. Antimonial salts, tannin, yellow and red prussiates, have no effect upon it. Alkalies, aided by heat, act destructively upon it; boiled with a mineral acid it splits into a peculiar kind of glucose and an acid that has been named Cathartogenic. Its formula is said to be $C_{132}H_{53}N_2SO_{44}$. Cathartic acid, in a combined state and of tolerable purity, is prepared by partially precipitating by strong spirit a watery infusion of senna, concentrated to a syrupy state by evaporation *in vacuo*. The filtrate is now treated with a much larger bulk of absolute alcohol, and the precipitate thus obtained is purified by repeated solution in water and precipitation by alcohol.

To obtain the pure acid, advantage is taken of its colloidal properties; the crude cathartate is dissolved in moderately strong hydrochloric acid, and subjected to dialysis on a diaphragm of parchment paper. The minimum dose of this pure acid was found to be about $1\frac{1}{2}$ grains, which caused several stools with decided griping.

The combinations of cathartic acid that I have made are, the

cathartate of ammonia, prepared from cathartate of lead by my original process, and the mixed cathartates, prepared according to Dragendorff's method as modified by myself. Of the former nearly pure salt, I have found $3\frac{3}{4}$ grains to purge fairly as to amount, but slowly as to time, and with considerable griping. Of the latter, $7\frac{1}{2}$ grains purged violently with much griping and sickness, which continued through the greater part of the day, completely knocking the patient out of time; 4 grains, would, I think, be a fair dose. It should, however, be given in conjunction with a saline and an aromatic corrective of some kind. With phosphate or potassio-tartrate of soda an agreeable and effective aperient might be formed; possibly the cathartrate itself might be modified in its action by opium, belladonna, or hyoscyamus. I cannot affirm, however, that the active principle has a more unpleasant action than the raw drug, but such I should expect to be the case.

It obviously would be improper to combine senna with any of its metallic precipitants should such be desired, which is not likely. It is here satisfactory to observe that the cathartate of magnesia is soluble, and that the old-fashioned black draught agrees with new-fashioned science.

The effect of acids on senna must not be overlooked. The mineral acids precipitate, aided by heat they destroy, its active principle, as I have pointed out already. The organic acids precipitate it from its aqueous solution, but *do not* decompose it on boiling. Here then is a very important distinction, one that saves the credit of such preparations as the old Infusum Sennæ Limoniumatum, Decoctum Tamarindorum cum Senna, and others of the class, not forgetting the much used Conf. Sennæ Co.

The long-continued action of heat on cathartates exposed to air in watery solution, is to decompose them, rendering them inert. Decoctions and extracts of senna are therefore to be made with proper precautions, or preferably abandoned in favor of the recent and quickly-made infusion.

Fermentation either of the infusion, pure and simple, or of the infusion made into syrup with sugar, decomposes the glucoside most completely. I have been assured by a constant taker of

Ess. Sennæ Dulc., that the latter part of the bottle of essence is never so active as the first. Particular care, therefore, should be taken to obviate fermentation. The best way to do so is to add to each fluid ounce of syrup two minims of chloroform dissolved in a little alcohol. Chloroform will not only prevent fermentation, but will at once arrest it when in full swing. The fact is worth repeating, if already known.

As regards the relative values of Alexandrian and Tinivelly sennas, my experiments go to prove that the former yields half as much again of the active principle as does the latter.

I have made no experiments on the follicles of senna. They were preferred by Mesue. Pomet states that they are equally efficacious as the leaves, without partaking of their noisome flavor. Dodoens gives a very quaint and accurate summary of the whole therapeutical question, part of which I will, as a conclusion, venture to transcribe:—

“The coddess and leaves of sena are hoate in the seconde degree and drie in the first.

“The coddess and leaves of sena taken in the quantitie of a dram, do lose and purge the belly, scoure away flemme and choler, especially black choler and melancholie.

“The leaves of sena are good for people that are geven to be sadde, and pensive, dul, and feareful, and that are sodainely afrayd for litle or nothing. They are good agaynst all stoppings of the liver, the splene, agaynst the paynes of the head, the scurffe, manginess, itche, and lepzie. In fewe wordes, the purgation made with the leaves of sena, is good agaynst all diseases springing of melancholie, adust, and salt humors.

“The coddess, after the opinion of Mesue, are best to be used in medicine, and next the leaves, but the stalkes and branches are unprofitable. Sena provoketh windinesse and gripings of the belly, and is of a very slacke operation. For a correction or remedie, you must put to sena annys seede, ginger, and some sal gemme, or you must boyl it with annys seede, raysons, and a little ginger; for being so prepared and drest, it maketh his operation quickly and without any greefe.”

NOTES ON LEMON-JUICE AND ITS DECOMPOSITION.

BY W. W. STODDART, F.G.S.

The long continued separation which a sailor afloat endures from all that is fresh and varied in his food, especially from that of a vegetable nature, has always been known to be productive of disease.

For many years the physician has known that the free use of fresh vegetables, or a sufficient quantity of the juice contained in the hesperidia of lemons (*Citrus Limonum*), or of limes (*Citrus Limetta*), will speedily ensure a cure of the unfortunate patient.

The two latter, from their easy preservation and portability, have been a *sine quâ non* with sailors—so much so, that the marine authorities have ordered every ship to have in its stores a quantity proportionate to the crew. In this respect, as in many others, poor Jack has been grossly victimized by the rascality of dishonest dealers; probably I should not be far from the mark, if I said that half the liquid sold as lemon or lime-juice has been a mineral rather than a vegetable production. A modern author coolly informs us that an artificial solution of sulphuric acid is more agreeable to the nautical palate than the true juice!

As long ago as 1795, the Admiralty issued orders that ships should carry a supply of lime or lemon-juice, but ever since that time this well-meant regulation has been rendered null and void by the wretched trash that has been bought and sold. An immense quantity of lime and lemon-juice being required in the market, and the supply to a certain extent limited, the most abominable and fraudulent adulterations have cruelly been the rule instead of the exception, and many times a genuine sample could not be bought at any price. The Board of Trade, being aware of this, wisely resolved to pass, in the present year, "The Shipping Act."

This compels the mate of every foreign-going ship to provide so much lime or lemon-juice, that each man may have at least one ounce per diem, so soon as the vessel has been ten days at sea. That for forty men, 1 gallon should be kept; for sixty, 2 gallons, and so on. It goes on to summarily forbid every captain to take on board any lime or lemon-juice that has not been

passed by an officer appointed by the Board for that purpose. It is to be tested for gum, sugar, citric acid, and general freedom from adulteration. It is to have a specific gravity of not less than 1.030 and not less than 30 grs. of citric acid per ounce, and to have a proper taste, color, odor, and consistence. The consternation among the merchants holding large quantities of lemon-juice may easily be imagined, for although the Board of Trade has given considerable latitude in their requirements, yet hardly any in the market would stand the tests, and pass the examining officer. Not an ounce of genuine juice was to be bought in Liverpool, Birmingham, or Bristol.

This then being the case, naturally led to a great many analyses of samples from various quarters. The author was thus attracted to the present subject by the wide discrepancy between the result of his experiments, and the information published in our best books.

For instance, Pereira gives an analysis of lemon-juice by Proust, showing that it contained 1.77 per cent. of citric acid, or about 10 grains per ounce. The specific gravity is not mentioned. It is surprising that the statement should have been introduced into the last edition of that work. In our excellent *British Pharmacopœia*, *freshly pressed* lemon-juice is said to have an average specific gravity of 1.039, and an average quantity of 32.5 grains of citric acid per ounce. These two do not agree; the specific gravity is too great for the acid. In Muspratt's "Dictionary," juice containing seven per cent. or 31.5 grains per ounce, is termed very superior. In Mr. Watt's splendid work, 4.7 per cent. or $20\frac{1}{2}$ grains per ounce is quoted as the amount. Muspratt says that lemons at an earlier part of the season are more acid, and as the season advances the water is a percentage or two higher. All these statements are so greatly at variance with the results I have found, that I am induced to bring the subject before the Conference.

As will be seen, the Board of Trade have fixed very liberally for the vendors the specific gravity of 1.030 as the standard, and 30 grains per ounce as the *least* quantity of acid.

On February 25th of this year I bought a lot of lemons from six different shops, and after mixing them, I pressed eight, which

gave seven ounces of juice, having a specific gravity of from 1.040 to 1.046, and yielding 40 to 46 grains per ounce, or 9.6 per cent. of citric acid.

The specific gravity was taken by one of Griffin's hydrometers, as ordered by the Board.

	1	2	3	4	5	6	Average.
Crystallized Citric Acid	42.90	40.05	41.74	39.02	44.60	46.0	42.53
Gum and Sugar	3.45	2.39	3.03	2.96	3.67	3.64	3.19
Inorganic Salts	2.58	1.18	2.38	2.22	2.61	2.73	2.28
Total grains per ounce	48.93	43.62	47.15	44.20	50.88	53.27	48.00
Specific gravities	1.043	1.040	1.042	1.040	1.045	1.045	1.044

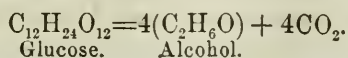
The remainder of the lemons was put aside till the end of May, and again examined. The result was thus:—

	1	2	3	4	5	6	Average.
Crystallized Citric Acid	40.90	39.65	39.66	36.38	43.93	45.77	41.04
Gum and Sugar	4.33	2.63	4.51	4.25	3.92	4.44	4.01
Inorganic Salts	2.58	1.18	2.38	2.22	2.61	2.73	2.28
Total grains per ounce	47.81	43.46	46.55	42.85	50.46	52.94	47.33
Specific gravities	1.041	1.039	1.040	1.038	1.044	1.044	1.041

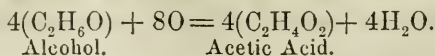
It will therefore be observed that, as the lemons were kept, and the summer advanced, the quantity of acid decreased (at first slowly, but at length very rapidly), but the specific gravity only suffered comparatively slight diminution; the quantity of the juice also remained the same, for eight lemons yielded 7 ounces in May as in February.

On examining the remaining fruit in July the curious fact was ascertained that, although the specific gravity was 1.027, yet there was not a particle of citric acid. Analysis showed that it had all split up into glucose and carbonic acid.

Since this, the nitrogenous matter in the juice has again set the whole into fermentation. The glucose has produced alcohol, and the alcohol acetic acid, thus:—



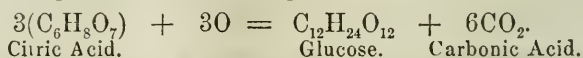
Then, after passing through the intermediate stage of aldehyde,



This result you have before you on the table.

On examining a vessel containing a large quantity of lemon-juice, the peculiar earthy smell of carbonic acid is distinctly perceptible. For a clearer proof, a quantity of juice was put into a bottle which was connected by a glass tube with lime water, beneath which the glass tube dipped; all was hermetically sealed and laid aside, when the deposition of carbonate of calcium became sufficiently evident.

The decomposition would be explained thus:—



This change is of course one example among many of the chemical transformations which take place in the maturation of fruits, and a striking one it is.

Freshly expressed lemon-juice is a thin, milky, slightly yellowish liquid, having a sp. g. from 1.040 to 1.045, and containing from 39 to 46 grains of citric acid per ounce. Should either of these be less, the lemons must have been kept too long or gathered too late in the season.

Liquor potassæ turns the juice a peculiar dark color, well known to those accustomed to diabetic examinations.

When freshly pressed the smell is aromatic, but when kept for a few days acquires the mouldy flavor which the commercial juice usually possesses. Trommer's and Fehling's tests give a decided indication of glucose.

With polarized light the ray is turned to the right. Acetate of lead gives a muddy white precipitate (gummate of lead).

Chloride of barium, nitrate or acetate of potassium, or chloride of calcium should give no precipitate, indicating the absence of sulphuric, tartaric, or oxalic acids. The aroma of the pure juice is very peculiar, and differs as much from any artificial compound as rose-water distilled from the petals does from that made with otto.

The juice from limes is not so acid as that from lemons.

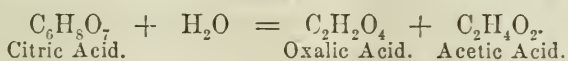
Through the kindness of a friend I obtained a dozen limes

from Glasgow, from these I obtained $5\frac{1}{2}$ ounces of juice. This was very much more aromatic and more delicate in its flavor than lemon-juice. Its sp. g. was 1.037, and contained 32.22 grains per ounce. It was, therefore, not so strong as lemon-juice.

Messrs. Southall, of Birmingham, furnished a sample as coming from the Olveston Plantation, in Montserrat, which had a deep yellowish-brown color; this, I presume, was given artificially, as that pressed by myself from the fruit was nearly colorless.

This coloration has since, however, been shown to have been accidental from the containing vessel.

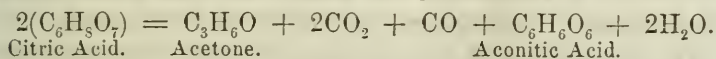
A singular fact was communicated to me by D. Davis, Esq., Medical Inspector for Bristol, which was (at any rate, to me) quite new. Of course, all chemists are aware that when citric acid is *fused* with potassa it is decomposed into oxalic and acetic acids, thus:—



But when liquor potassæ is mixed with common lemon-juice *in the cold*, oxalic acid may be detected in a few days.

When lemon-juice is carefully evaporated it yields a rich brown extract, which is very peculiar both in smell, taste, and appearance, so much so that any one accustomed to make these experiments can in one moment tell whether or not it is a genuine juice.

An ounce of lemon-juice will average 27 grains of dry extract per ounce. After a certain point the extract becomes carbonized, having a rich brown color and pleasant smell. This is owing to its partial decomposition into acetone, carbon, carbonic acid, carbonic oxide, and aconitic or pyrocitric acid.



It seems quite impossible to evaporate the juice to dryness without decomposition.

During the first six months of the present year a great number of samples of commercial juice were examined; the following are a few of them procured from London, Bristol, Liverpool,

Leith, Birmingham, Newport, Cardiff, Southampton, etc., besides samples obtained from wholesale and retail druggists and importers of foreign produce. Some were plainly artificial, a few contained sulphuric acid, but most of them were merely diluted with water. The greater number of those obtained from the retail shops were artificial, and in no single instance stronger than twenty-four grains per ounce.

The following table is the result of twenty of these analyses made of samples from the places before mentioned. They are calculated as grains per fluid-ounce :—

No.	Citric Acid.	Gum and Sugar.	Sp. g.	Adulterant, and Remarks.
1	25	3.10	1.026	Watered.
2	30	3.90	1.032	Artificial.
3	20	2.00	1.021	Watered.
4	28	2.00	1.028	Watered.
5	35	5.80	1.037	Artificial and Cane Sugar.
6	14	2.00	1.023	Artificial and Tartaric Acid.
7	15	1.99	1.016	Watered.
8	18	3.00	1.019	Artificial.
9	19	9.00	1.027	Artificial.
10	42	3.45	1.043	Genuine.
11	28	2.85	1.029	Watered.
12	19	13.52	1.022	Artificial.
13	42.22	6.50	1.044	Genuine.
14	32.22	3.90	1.033	Genuine.
15	43.90	10.50	1.048	Genuine, but colored with some extract.
16	29.5	2.90	1.030	Genuine, but reduced.
17	5.3	—	1.028	With Sulphuric Acid and Sugar.
18	40	3.60	1.042	Genuine.
19	32	3.44	1.033	Genuine.
20	30	1.59	1.030	Artificial.

Thus, it will be seen, that in no article was adulteration carried on to a greater extent than lemon-juice, and prior to the present Act a genuine sample was hardly ever obtainable.

The juice keeps its strength better separated from the fruit than in it. A good sample may be kept for years without sensible diminution of its acid, especially if fortified with spirit.

The cell-structure of the fruit seems to be the chief source of the fermentative matter, especially that part of the mesocarp that forms what is commonly called the white of the rind.

The ingredient in the juice, which is the therapeutic agent, seems to be a matter of dispute among medical men. Those who advocate Dr. Garrod's views—that it resides in the potash

—must have a homœopathic idea of its value, and plenty of faith. The analyses of many specimens of ash show only $\frac{3}{10}$ grain of potash per ounce. Others, with Dr. Tanner, and I think with more reason, rely on the citric acid as the chief means for curing scurvy.

The molecules of citric acid are very remarkable for their tendency to change, especially when sugar or gum is present. As remarked before with regard to lemon-juice, so a solution of crystallized citric acid cannot be evaporated to dryness without decomposition, even with a very gentle heat.

Like all seaport towns, a great many cases of scurvy are present in Bristol, and I have the authority of several of our leading physicians for saying that they find the crystallized citric acid as efficacious as lemon-juice (especially with fresh meat and vegetables) in curing that disease.

But as this question is more in the sphere of physicians than the pharmacist, it had better be left in their hands for solution.—*Lond. Pharm. Journ.*, Oct., 1868.

Editorial Department.

BAD DRUGS—WANT OF UNIFORMITY IN OFFICINAL PREPARATIONS:—SHOP INSPECTION BY THE BOARD OF HEALTH PROPOSED AS A REMEDY.—To the pharmacist and physician who has the true interests of pharmacy and medicine at heart, the present methods of supplying the demand for officinal preparations are calculated to create grave doubts of their adequacy to meet the wants of the practitioner, or to enable the pharmacist to do his just duty as the custodian and dispenser of the preparations of the Pharmacopœia.

Among the causes which lead to this opinion are a tendency to the relinquishment of the business of making preparations in the shop; excessive competition among “manufacturing pharmacutists,” by which uniformity is invaded in the strife for lowness of price; ignorance on the part of physicians of the remedies they prescribe; and ignorance and unscrupulousness on the part of a large number of dispensers in reference to the quality of the medicines they sell. When a pharmacist makes his own preparations he knows what they are, and is responsible for their quality; he graduates the supply to the demand, and thus renews his

stock as often as it is needed. But when once he leaves this true standpoint and abandons his proper business as a *preparer* as well as *dispenser* of medicines, he is at the mercy of circumstances over which his control is very limited. The pharmacist who is daily engaged in preparing the medicines he vends, becomes so intimately acquainted with their properties that he can form a fair judgment of their quality when made; but when he foregoes this duty, and depends on the druggist and manufacturer for all the more important preparations of the Pharmacopœia, he blunts this power of judgment, if once possessed, to a large extent; and when he has never acquired it practically, he cannot trust his senses to the same degree, even supposing he sets out with a supply of good preparations. This evil applies most largely to the extracts, fluid extracts, powders, sugar-coated pills, and the so-called concentrated remedies of eclectic origin, some of which are getting into use.

The fixed and well-marked properties of chemicals, organic as well as inorganic, afford criteria for determining their quality always within reach of the qualified pharmacist; but the other classes of preparations mentioned, together with tinctures, wines and other galenical preparations, are much more difficult to assay. It is of the utmost importance to have reliable processes in the Pharmacopœia, but of what avail are they if not followed. The formulæ of that work are gotten up for the use of the pharmacist—in his shop or laboratory—on a moderate scale, and are hence often not so well suited to large manufacturers. This is a constant source of alterations in manipulation and in solvents, so that the time may be shortened or the expense decreased; rarely is the plea to make a better preparation. Unfortunately the formulæ of the present Pharmacopœia were made when alcohol was worth fifty cents a gallon, which, after the war-tax was placed upon it, rendered its use in the proportion required almost an impossibility by manufacturers, who, in order to keep down the cost of their preparations, resorted to all sorts of modifications of the methods of extraction. The consequence is that hardly any two of the large manufacturers of fluid extracts adopt the same process, and preparations of the same name vary exceedingly in sensible properties, specific gravity and medicinal power, as made at one and the other laboratory. Another objection is the working up of inferior drugs into extracts and fluid extracts, the manufacturer resting satisfied if he puts in the quantity of the drug called for. Then the deterioration arising from long keeping, exposure, due to excessive production, etc. As to the remedy for all this we see none but the adoption of means to insist on the authority of the Pharmacopœia on the one hand, and to provide legal aid in demanding qualification from the dispensers. It appears to us that the medical profession are, to a large extent, accountable for the evils we have pictured, in so far as they have encouraged these departures from authority on the part of wholesale manufacturers. It is proverbial how easily physicians are influenced by

novelties and flattered by pharamceutists into the approval of preparations which have but few real claims to merit. This arises in a large degree from an imperfect acquaintance with that part of their profession which bears on pharmacy. We have been led into this course of thought by a movement commenced in Cincinnati, which is yet, so far as we know, in an undeveloped state, called forth by the reading of a report by Dr. Uzicker, on new remedies and pharmacy. In the comments on this paper, Dr. Thacker suggested the appointment of an inspector of drugs by the Board of Health, giving as his reasons the impurity of the preparations and drugs sold in Cincinnati, believing it hurtful to the public health, and a proper subject for the Board to act upon. Much as we desire reformatory measures, we very much doubt the policy of referring such a power of surveillance to the boards of health, as they are usually constituted.

In evidence of the correctness of this opinion, we may state that a committee of the Cincinnati Academy of Medicine has already presented a recommendation to the Board of Health of that city (see page 382 *Philada. Med. and Surg. Reporter*, Oct. 1868,) asking the appointment of an inspector of drugs, whose duty shall be "to examine and test all such articles as are kept in drug stores, and that are used in any way or manner in compounding or preparing medicines, or used as remedies for the cure of diseases. All [wholesale] drug stores located within the city limits should be subject to inspection, and all retail establishments shall be inspected at least twice each year." Following this is a long account of the details of the proposed inspection, which is to include druggists, pharmacutists, quack medicine makers and venders, and drug mills, and includes the weights and measures, the observance of the poison laws and the qualifications of clerks, and winds up with the information that each inspection of a retail store is to be two and a half dollars, of a wholesale, ten dollars, each, and of a patent medicine vender, twenty dollars each. What a fat position this office would afford for unsuccessful members of our profession, who, whilst they had not sufficient knowledge to gain success when in business, could doubtless analyze and assay drugs, medicines and quackeries by intuitive perception, with a rapidity and success dependent on the circumstances the case offered. With equal propriety, we think boards of health might proceed to appoint examiners, whose duty it should be to inquire into the qualifications of all doctors to practice medicine, including their ability to write legibly and to recognize the medicines they prescribe.

It will be much better for pharmacutists to take the initiative by reforming themselves by aid of a salutary educational law, making the diploma of a responsible chartered institution necessary to all who practice pharmacy or sell poisons by retail. The American Pharmaceutical Association at its last meeting appointed a large and able com-

mittee to carry out its views in regard to State laws bearing on pharmacy, and we may look forward to the report of this Committee, in September next, with hopeful interest.

DEATH FROM ATROPIA THROUGH THE IGNORANCE OF AN APOTHECARY, AND THE BAD WRITING OF A PHYSICIAN.—On Friday, the 6th of November, the coroner's jury, in Philadelphia, rendered the following verdict :

"From the evidence elicited before us, we find that Mrs. Sophia Hecht sent to the drug store of Henry A. Bower, north-east corner of Sixth and Green streets, on Tuesday morning, November 3d, 1868, to have a prescription calling for four cathartic pills, which had been renewed several times before. These pills were taken by the deceased. Soon after severe and alarming symptoms came on. Physicians were called, when it was discovered that Joseph H. Bower had, by a mistake while compounding the prescription, substituted atropia, a deadly poison, for assafœtida.

"We, therefore, find that the said Sophia Hecht came to her death from a narcotic poison known as atropia. We also severely censure Henry A. Bower for allowing an incompetent person to compound prescriptions at his store, and deprecate the practice of renewing prescriptions from the file."

The facts of the case briefly are these: Dr. Phillip De Young prescribed an anti-bilious dose of four pills, containing two grains of assafœtida. It was renewed several times correctly, when it fell to the lot of Joseph H. Bower to dispense it again. The word assafœtida, not plainly written, was abbreviated, and by some unaccountable impulse was read *atropia*, and the dose of four pills, containing two grains of that alkaloid, dispensed apparently without a thought as to its poisonous nature and excessive amount. According to the evidence of Dr. H. C. Paist, the only reason offered by the young man was that the price marked on the prescription was such as would be asked for such a quantity of atropia! and he appears to have ignored altogether the train of reasoning which every competent dispenser would have instituted, before he dispensed so potent a substance for internal use on the assumption that it was ordered. No good or sufficient excuse can be offered in this case; for we take the ground that, if the physician had ordered atropia, a competent pharmacist would not have dispensed it. His own sense of responsibility would have prevented it. The actor in this case, by his own admission, seems wholly incompetent to dispense prescriptions, and a great responsibility rests with his employer, if it be true that he delegated his business, during absence from the city to such a substitute. On the other hand, we believe the mistake would not have happened if the prescription had been properly written; and the event is a warning to many physicians to use more care in this part of their daily duty, that they may avoid the responsibility of causing these sad accidents. The deprecation of the jury regarding the renewal of prescriptions is uncalled for, has no bearing on the case, and would have been better if applied to the practice of *abbreviating* important words in these responsible documents.

Now what is the remedy? what influence is sufficiently potent to reach this crying evil—incompetent dispensers? Education and training in a Pharmaceutical College, under the guarantee of the diploma (subject to the action of the common law for neglect of duty). Such an institution has been in operation in this city for nearly half a century. It teaches the history and quality of all drugs and their active principles; the manner of making and dispensing medicines, and the chemical laws and principles which govern the processes employed. We have carefully looked over the annual class list of this School of Pharmacy for eight years past, and do not find the name of the young man who committed this unfortunate error. Had he attended that school, in all probability this sad calamity would not have happened. A wholesome public opinion should demand that those to whom the life and death business of dispensing is committed, should be properly educated and trained for the service. That poisons are necessary agents in the cure of disease is admitted in all systems of medical practice. In England, where accidents from poisoning are more frequent than in this country, and where, until recently, the greatest latitude existed in the sale of poisons by druggists and grocers, the authority of Parliament has at last interfered, and by an act passed in July last, made it obligatory, after the first of January, 1869, on every person not then in business, who sells any of the poisons indicated in an appended schedule, to pass an examination as to qualification for that service, by a board of examiners appointed by the Pharmaceutical Society of Great Britain. This is a great step in advance as regards that kingdom, and was rendered possible by the widespread influence and able management of the Pharmaceutical Society in taking a firm stand for the right in all matters pertaining to pharmacy, causing the government to have confidence in their execution of the delicate and responsible duty of conducting the examinations. In the present state of pharmaceutical institutions in the United States, it is not probable that any such universal power will be granted by State Legislatures, much less by Congress, to any one institution now existing; yet this should not discourage the friends of progress. Let colleges or societies be established in every city; let these join their efforts, through the American Pharmaceutical Association, and eventually they will be able to influence Congress to legislate for the security of life in the sale of poisons, just as it now does in reference to the management of steam-boat boilers and other sources of danger to the public health and life. The preliminary steps are already taken to exert an influence on State Legislatures by a committee of the Association.

OUR SCHOOL OF PHARMACY.—On the 7th of October Prof. Edw. Parrish opened the courses at the School of Pharmacy, at the new hall of the Philadelphia College of Pharmacy, in a general Introductory, chiefly occupied with a history of the rise and progress of the institution, em-

EDITORIAL.

bracing many interesting facts throwing light on the various movements and individuals connected with its origin. It had been our expectation to print this address in full, in several consecutive numbers, but it has been deemed best to publish it in pamphlet form, in connection with a general report of matters pertaining to the College. The Class this season numbers 179, which is the largest ever convened under the auspices of the College. The annual catalogue of the class, at page 94, will give the reader information in reference to the sources whence the students come and who are their preceptors. The school opened before the lecture rooms were finished, and several weeks elapsed before they were quite ready. We have no hesitation in saying that no more comfortable and better lighted lecture rooms can be found in this city. Their capacity is about double those of the old building (*viz.*, 350 seats), and the seats are unusually comfortable. Owing to the delay of the mechanics in completing many of the appurtenances, and the painting, the professors labored under many disadvantages during the first two months of the course, but now all is comfortably arranged. Owing to the same cause, the library, cabinet and herbarium of the College are yet mainly in boxes, but in a few days, it is hoped, the several committees having them in charge will be able to replace them in the cases, which have been repainted. As yet no steps have been taken to furnish the practical laboratory; this delay was anticipated, and it has been deemed far wiser to proceed with deliberation, than by haste to fail in making a judicious beginning.

PHARMACEUTICAL EDUCATION IN ENGLAND.—At the monthly meeting of the Pharmaceutical Society held on October the 7th, 1868, occasion was taken to inaugurate the lecture season of the School of Pharmacy by the public announcement by the professors of the results of the previous season, by the conferring of medals and certificates of honor on the most successful students in each branch, and by an address introductory to the coming courses by Mr. Henry B. Brady, of New Castle-on-Tyne. There does not appear to have been a diploma issued by the Pharmaceutical Society granting a degree to the holder, but we presume a certificate of successful examination has been given to the candidates who pass the major and minor examinations generally, reserving to the three most successful students the reward of prizes and certificates of merit and honor. There is also the "Pereira medal," which is given for the best examination in *Materia Medica*. The practice of offering a special reward of honor to the student has a stimulating influence on a considerable portion of a class, yet in the absence of a diploma the effect is discouraging to the remainder. As examinations are now made obligatory on all who hereafter enter the ranks of pharmacy, either as "chemists and druggists" or "pharmaceutical chemists," it is probable that diplomas will issue granting the use of the names as titles under which to practice pharmacy.

The address of Mr. Brady, as published, is an admirable and appropriate effort to impress the gathered pupils of the coming session with the importance of earnest labor. He cautions them against superficiality—urges them to be *thorough*, and to strive until they master the principles or laws of that which they engage to attain. We would like to print the whole address for its intrinsic merit were it possible to accord the space. Through an esteemed correspondent in London we learn that ‘the Pharmacy Act’ will do excellent service to the cause of pharmaceutical education. Enforcing examination of every future pharmacist, it will bring all within the influence of systematic training, and thus fan into the flame of knowledge any spark of curiosity or wonder existing within the brain of a candidate for the legal titles of “chemist and druggist” or “pharmaceutical chemist.” Already the school of pharmacy in connection with the pharmaceutical society is fuller than in any previous session; nearly 100 students are attending the lectures on chemistry, pharmacy, botany and materia medica, while nearly 50 are working daily at practical chemistry for periods varying from three to ten months. Before the end of the session it is expected that from 70 to 80 pupils will have occupied benches in the laboratories. Classes for study are also being formed in many of the provincial towns in which opportunities for pharmaceutical education did not previously obtain.” This is encouraging to those disinterested pharmacists whose generous and persevering efforts have brought it about. They have yet much land to plow, much seed to sow, and afterwards long continued and tedious labor to bestow in extirpating the weeds, quackery, ignorance and bad habits, which grow faster than their seedlings. Nevertheless we hope they will persevere and in the end obtain the mastery, by giving to England a corps of well-educated and respectable practitioners, with a freedom of action in accordance with British law, and without those numerous legal restraints that mark as well as mar continental pharmacy.

PHARMACEUTICAL SOCIETY OF ST. PETERSBURG.—An invitation to the honorary and corresponding members of this Society to be present at the celebration of its fiftieth anniversary, on the 3d of October, 1863, at St. Petersburg, signed by the *Director*, John Pfeffer, and Secretary, Dr. A. Casselman, was duly received by the Editor, and is hereby acknowledged.

OUR JOURNAL.—The present number commences the *forty-first* volume of this Journal. It has been delayed about ten days beyond the usual time of publication by the printer, owing to the interference caused by the Proceedings of the Association being printed in the same office. This number is rich in original articles, especially those read before the late meeting of the Association, and credited to its proceedings which will make amends for the delay. We will take the opportunity to earnestly remind our subscribers that the subscription price of this Journal is due in advance; it has never been published with a view to profit, and

the Committee are constantly out of pocket by the want of promptness of our patrons. Hoping better things for the future we commend our labors to their favorable consideration.

List of the Contributors to the Building Fund for the New Hall of the Philadelphia College of Pharmacy. (Continued from Page 565. vol. xl.)

Wilson & Jones, (additional, omitted by mistake).....	\$31 00	Thos. A. Lancaster.....	50 00
Ephraim K. Smith.....	10 00	French, Richards & Co.....	200 60
S. Mason McCollin.....	10 00	Carpenter, Henzey & Co.....	100 00
C. E. Haenchen.....	10 00	Samuel F. Troth.....	100 00
Emilius Herwig.....	10 00	Thos. S. Wiegand.....	50 00
John M. Maisch.....	50 00	Samuel Simes.....	25 00
C. B. Linn.....	10 00		\$1,206 00
Dr. Geo. B. Wood.....	500 00	Previously,	6,281 50
John W. Simes, Jr.....	50 00	Total contributions,	\$7,487 50

ADVERTISING SHEET.—Our readers are invited to examine the schedule of prices for advertisements commencing the sheet. The rates have been somewhat advanced, having been far lower than those of any other Journal offering the same advantages.

Report of J. Ross Browne on the Mineral Resources of the States and Territories West of the Rocky Mountains. Washington, Government Printing Office, 1868 ; pp. 674, octavo.

Report of James W. Taylor on the Mineral Resources of the United States East of the Rocky Mountains. Washington, 1868 ; pp. 72.

The object of the Government in eliciting these reports seems to have been to condense, in a reliable and systematic manner, the numerous floating facts and statistics, and to ascertain the real condition of the mining interests and resources of the great region west of the Rocky Mountains. It was sought to get at the full history, early and late, of the mining interests of the Pacific coast ; of the geological formation of the great mineral belts ; of the various systems of mining in use ; the character of the population engaged ; the relations of mineral and agricultural lands and of fuel existing, and of water power available ; of salt beds and deposits of soda, borax, sulphur, and other minerals ; the character of climate, altitude, etc. ; the number of banking institutions in the mining towns, with their facilities for assaying and refining bullion and for its transportation ; the various means of intercourse by roads, telegraphs, and post-offices ; the necessity of assay-offices and public depositories ; the local mining laws and customs regulating the holding and working of claims, and finally the number of ledges opened, the character of the soil in mining districts, and its adaptation to the support of population.

The reporter, Hon. J. Ross Browne, (now Minister to China,) seems to be eminently qualified for his task, and has produced, by the aid of a corps of gentlemen to whom chiefly he gives the credit due, a work that

will be of great use to all who desire information on this important national interest.

The collection and transportation of treasure of course constitutes the main item in this report, that most interesting to the government, and though we have but little space to spare, the following tabular view of the yield for 1867 and the total yield since 1848 is given:

States.	1867.	Total since 1848.
California,	\$25,000,000	900,000,000
Nevada,	20,000,000	90,000,000
Montana,	12,000,000	65,000,000
Idaho,	6,500,000	45,000,000
Washington,	1,000,000	10,000,000
Oregon,	2,000,000	20,000,000
Colorado,	2,500,000	25,000,000
New Mexico and Arizona,	1,000,000	5,000,000

\$70,000,000

In jewelry, plate, spoons etc.,
retained in circulation
on Pacific coast, 45,000,000

Total, \$1205,000,000

Mr. Browne adds to the above a sum of 50 millions to represent treasure buried, concealed and otherwise unaccounted for, making 1255 millions.

Besides the precious metals the development of other minerals has been very considerable, among which the principal are copper, iron, quick-silver, coal, marbles, lime-stone, dolomite, hydraulic cement, granite, gypsum, sand-stone, soap-stone, clays, kaolin, pipe-clay, coloring earths, sand for glass, plumbago, salt, asphaltum, petroleum, borax and sulphur.

These are only a few of the minerals that may be utilized in the future, when an increased population will extend the development of the strata now searched only for the precious metals. Of latter years the agricultural and horticultural interests have made strides in proportion to the mineral, producing a large excess of bread stuffs and fruit. Wine-growing has already been fairly started, and the axe has long since opened up the timber trade on the mountain slopes of the upper vallies.

This simple enumeration gives an earnest of what elements of future wealth and growth are embraced in the wonderful region noticed in this report. We can well remember, more than thirty years ago, when Mr. Nuttall and John Townsend started for Oregon, overland, on a botanical expedition, that whole region from the Straits of Fuca to Monterey, except here and there along the coast, was a vast wilderness. Then came the overland expedition by government, the Mexican war resulting in the acquirement of California and New Mexico, with the magic development of the gold placers following in 1849, which resulted in precipitating on that coast the most heterogeneous mass of enterprising adventurers that the world had ever witnessed. Of this preliminary mixed population our author speaks as follows, in closing his report:—

"The tendency of this pursuit is, at first, to attract a reckless and adventurous population, whose disregard of conventional restraint leads to the assumption of risks and to bold and hazardous undertakings, by which new countries are most rapidly opened up to settlement and civilization. Providence so ordains it that the superficial treasures of the earth designed to attract this enterprising class soon disappear, and a higher order of intelligence is required, and a more permanent condition of things established. It is only necessary to look back over the past eighteen years to find in the advancement of this vast region, known as the Pacific slope, the strongest possible refutation of the assertion that mining is inimical to the welfare of the people. Looking forward to the future who can predict the high condition of prosperity likely to be attained by the new States and Territories eighteen years hence? With trans-continental railroads and telegraph lines binding the Atlantic to the Pacific; with more roads and lines traversing the country north and south; with the commerce of Asia pouring its treasures into our seaports; with an export trade commanding the whole eastern world; with a probable coast line stretching from Behring Straits to Cape St. Lucas; with innumerable flourishing cities and seaport towns; with an agricultural population numbering thousands where they now number hundreds; with busy manufactories scattered over the land; with churches, schools and colleges every where throughout the mountains and valleys. All of these many of us may live to see, but few can imagine the magnificent future that lies before us."

The Medical Formulary. Being a collection of prescriptions derived from the writings and practice of many of the most eminent physicians in America and Europe, together with the usual dietetic preparations and antidotes for poisons; to which is added an appendix on the endermic use of medicines, and on the use of ether and chloroform, the whole accompanied with a few brief pharmaceutical and medical observations. By Benjamin Ellis, M. D., &c. Twelfth edition, carefully revised and much improved by Albert H. Smith, M. D., &c. Philadelphia, Henry C. Lea, 1868; pp. 374, octavo.

Ellis's *Medical Formulary* has long been an established text-book to the prescriber, and amid the numerous works of an allied character, has held its ground remarkably. This has arisen partly from the excellence of the original issue, and partly from the carefully conducted revisions it has undergone at the hands of its several editors since the death of the author, Dr. Morton, Dr. Thomas, and now Dr. Smith. The new matter in the present edition is considerable, to make room for which several obsolete formulas have been omitted, and the new formulas have been enclosed in brackets, to distinguish them. The editor has added to this edition two new classes, viz., antemetics and disinfectants, besides many additions in other classes of remedies, which add considerably to the size of the volume. Among the new formulæ we observe

"*Soda Mint.*

R. Soda bicarbonatis,	. . . . .	ʒij.
Spt. ammoniæ arom.,	. . . . .	gtt. xl.
Aq. menthæ pip.	. . . . .	fʒviiij.

Misce.

Signa. Dose, a teaspoonful for an infant."

"Dr. J. F. Meig's anæsthetic pills.

R. Morphiæ sulphatis,	. . . . .	gr. viij.
Camphoræ,	. . . . .	gr. xx.
Olei cajuputi,	. . . . .	gtt. x.
Pulveris tragacanthæ,	. . . . .	gr. v.
Ext. gentianæ,	. . . . .	gr. xv.
Syrupi acaciæ,	q. s.	
Misce. et div. in pilulas C.		

Take 2 or 3 at a dose, to be repeated every half hour till relieved."

"Compound anodyne pill.

R. Ext. cannabis indicæ,		
Ext. belladonnæ,		
Ext. nucis vomicæ,	. . . . .	aa. gr. ij.
Ext. valerianæ,		
Quiniæ sulphatis,	. . . . .	aa. gr. xij.
Misce. et div. in pilulas xij.		

Signa. Take one pill every 2 hours until relieved (of simple neuralgia, especially cephalagia from cerebral irritation, or excessive mental activity.)"

A treatise on the Principles and Practice of Medicine; designed for the use of practitioners and students of medicine. By Austin Flint, M. D., Prof. of the principles and practice of medicine in the Bellevue Hospital Medical College, N. Y., &c. Third edition, thoroughly revised. Philadelphia, Henry C. Lea, 1868; pp. 1002, octavo.

The second edition of this work, published less than two years ago, was favorably received by the medical public, both at home and abroad. The endeavor of the author to prune it from redundancies and add to its practical character from the lines of his clinical experience, has been very successful in the present or third edition, gives it the freshness of a new work, and claims for it the attention of medical practitioners. Speaking of pulmonary tuberculosis, the author says:

"The hypophosphites were introduced some years since, by Dr. Churchill, as a specific remedy, the pathology of the disease being supposed to involve a deficiency in the system of phosphorus, and this element existing in the hypophosphites in a form readily assimilable and in a low state of oxidation. Experience has abundantly shown that the disease is not arrested by the introduction of phosphorus into the system: in other words, that this has no claim to be considered a specific remedy; but it appears in some cases to be highly useful as a tonic remedy."

The work is gotten up in the usual good style of the publishers, bound in leather. Price, in this form, \$7.00; in muslin, \$6.00.

Criminal Abortion; its nature, its evidence, and its law. By Horatio R. Storer, M. D., LL. B., and Franklin Fiske Heard. Boston: Little, Brown & Co., 1868; pp. 215, octavo.

To the non professional reader this work embodies much to cause surprise that there exists so much latitude in opinion in regard to the production of abortion in the minds of a large number of women, married and single, and of men, in regard to its criminality. Like the Lacedæ-

monian idea of theft, that it was only disgraceful when discovered, these practical and theoretical abortionists esteem it all right if it can be secretly conducted.

The work is divided into two parts. First, from the standpoint of medicine, and second, from the standpoint of law. The first discusses the criminality of abortion—its frequency and causes—its victims—its proofs—its perpetrators—its innocent abettors—and the obstacles to conviction. The author, after speaking of the professed abortionists and those who issue quackeries to aid in the work those inclined to produce it, says :

“Druggists, as a class, are little more than the confessed agents of these villains. Even should they not directly recommend their nostrums, as however is frequently the case, they almost universally keep them on sale, labelled to catch the eye, and placarded on the walls.”

This is a sweeping charge, and in many instances wholly untrue; for there are many pharmacutists that we can point to who habitually refuse to keep nostrums of the kind described, or to sell simple drugs known to possess emenagogue properties when they have any reason to suppose them to be for improper use. Yet the common habit with many to keep a full assortment of quackeries, may render them obnoxious to the charge of the author. Pharmacutists cannot be too careful in dispensing to avoid abetting, unintentionally though it be, this great evil. If the author's statements and statistics be true, this evil is already largely influencing the rate of population in New England and other parts, and is more prevalent in Protestant than in Catholic communities. The volume possesses great interest, and deserves attention from both professional and general readers.

Proceedings of the British Pharmaceutical Conference, at the fifth annual meeting, at Norwich, 1868. London, pp. 86, octavo.

We acknowledge the reception of this work from Prof. John Attfield, one of the general secretaries. We have anticipated it in our last issue, from the pages of the *Pharmaceutical Journal*. In addition to what has been there said, we quote the following from the prefatory notice :

“A list of subjects suggested for research is sent to members early in the year. Resulting papers are read at the annual meeting of the members; *but any new facts that are discovered* during an investigation, may be at once published by the author at any meeting of a Scientific Society, or in any scientific journal, or in any other way he may desire. In that case he is expected to send a short report on the subject to the Conference.”

This is a liberty sadly needed in our Association rules. No matter how important a discovery may be embodied in an article read at a meeting, the author has to wait the slow progress of the annual volume for his date of priority, and may loose altogether his right by anticipation in the journals by another discoverer. We hope this rule will be altered. The next meeting of the Conference will be in Exeter, in August. The annual subscription is five shillings.

Physicians' Medical Compend and Pharmaceutical Formulæ. Compiled by Edward H. Hance. Philadelphia, published by Hance, Griffith & Co., 1868; pp. 208, 12mo., from the editor.

This is another addition to the class of books that have been issued of late years by manufacturing pharmacutists, the main object of which is to advantage business by advocating the practice of making the weaker pharmaceutical preparations of a drug from its fluid extract, stating in the preface that when such preparations are made with the fluid extracts of the firm issuing the book, they have the strength directed by the United States Pharmacopœia. Received just as we are closing our last form, we have not examined it very critically, yet sufficiently to say that it embodies much information in reference to formulæ, doses and many therapeutic hints, together with a special chapter on poisons and antidotes, intended for emergencies. Notwithstanding these merits and the excellent typography and binding in which it is issued, the book is marred by the titles to the preparations, being a hybrid of English and Latin in most instances. We feel bound to again enter our protest against this class of books, as inimical to the true interests of pharmacy; *Firstly*, as not yielding practically, in many cases, the preparations of the Pharmacopœia; *secondly*, in encouraging an imperfect and irresponsible practice of pharmacy, wherein the dispenser has no means of assuring himself of the quality of his preparations, and depriving his apprentices of the laboratory practice that is their due.

Announcement of the fourth annual course of instruction in the St. Louis College of Pharmacy. Session 1868-69.

By an accidental oversight, this pamphlet was not noticed in either of our previous two issues, so as to be in time for those readers of this Journal who might have been inclined to attend that school. We regret this, as it has always been our wish to notice such announcements in due season. We will now say that the course commenced October 1, 1868, and will continue till March 1st, 1869: The branches taught are materia medica, medical botany, theoretical and practical pharmacy, and general chemistry, all considered with special reference to the requirements of the pharmacist. The course of materia medica and medical botany, by Prof. Potter; pharmacy by Prof. Primm; and chemistry, by Prof. McArdle. Fees for the course, \$30.

Annual Report of the Surgeon-General of the United States Army, 1868.

Printed at the Surgeon-General's office. From Surgeon-General Barnes.

We learn from this report that the disbursements during the year ending July 1, 1868, were \$1,756,608.27, of which more than a million was for payment of debts contracted prior to July, 1867. It also appears that there were 131,581 cases among 45,000 white troops, of disease and wounds, being an average of nearly three cases to each man per annum;

and 14,616 cases among 4,775 colored troops, being an average of a little more than three cases per soldier. On the 30th of September there were 289 garrisoned posts in the several military departments.

Fowne's Chemistry. The London publishers announce a new edition of this text-book under the editorial supervision of H. Bence Jones, M.D., and Henry Watts, F.R.S. The arrangement and notation of the work have been altered to suit it better to modern science, but, as far as possible, its original simplicity has been preserved. It is to be hoped that the American publisher will now give the new edition, instead of the old obsolete volume that has been evolved, and *re-evolved*, without change.

Retinitis Nyctalpica. By Prof. D. Arlt, of Vienna. Translated with consent of the author, by J. F. Weightman, of Philadelphia. Philadelphia, Lindsay & Blakiston; pp. 23, 12mo.

The Physician's Visiting List for 1869. Eighteenth yearly publication. Philadelphia, Lindsay & Blakiston

The omission to notice this annual in our last was accidental. It is not too late to say that the Physician's Visiting List retains the many qualities that have heretofore rendered it so good a friend to the practitioner, and deserves his patronage.

Catalogue of the Class of the Philadelphia College of Pharmacy, FOR THE FORTY-EIGHTH SESSION, 1868-69.

With a List of their Preceptors and Localities.

MATRICULANTS.	TOWN OR COUNTY.	STATE.	PRECEPTOR.
Adams, Lewis W.	Philadelphia,	Pennsylvania,	Wm. P. Thompson.
Allen, Charles Sumner,	Cleveland,	Ohio,	Arthur Mosely.
Anthony, Joseph,	Richmont,	Virginia,	R. Nebinger.
Ball, Edwin.	Philadelphia,	Pennsylvania,	P. S. Read.
Ball, Ellwood,	"	"	Heiman Gerhard.
Barton, George W.	"	"	J. C. Anguey, M.D.
Bates, Louis A.	Montgomery,	Alabama,	A. B. Taylor.
Beary, Eli S.	Allentown,	"	A. M. Meccray, M.D.
Bell, James S.	Albion,	Canada,	E. Parrish.
Bille, George,	Philadelphia,	Pennsylvania,	C. A. Werkshagen.
Bowman, Henry K.	"	"	Powers & Weightman.
Boyle, John,	"	"	C. Ellis, Son & Co.
Brenan, John M.	"	"	G. C. Evans.
Brendlinger, L. J.	"	"	A. Roidot.
Briggs, M. G.	Montgomery Co.,	"	J. G. Wells.
Buch, Charles P.	Lebanon,	"	R. England.
Canby, Joseph P.	Philadelphia,	"	C. C. Hughes.
Case, Theodore E.	New Albany,	Indiana,	Ambrose Smith.
Chamberlin, John.	Middle-town,	Delaware,	Mellor & Rittenhouse.
Chiles, Edward I.	Frankfort,	Kentucky,	E. Chiles.
Clarke, S. B.	"	Vermont,	C. Clarke, M.D.
Clemson, F. C.	Philadelphia,	Pennsylvania,	P. Niskey.
Condie, T. Douglas,	"	"	W. R. Warner.
Connally, W. C.	Atlanta,	Georgia,	
Cormeny, F. Henry.	Philadelphia,	Pennsylvania,	Lenher & Spencer.
Cummings, Joseph J.	"	"	John Gegan, M.D.
Cummings, M. J.	"	Ireland,	G. W. Dougherty.
Dagny, James A.	"	Pennsylvania,	Wm. Trinder.
Davis, Robert.	Pittsburgh,	New York,	G. B. Balch.
Davis, Aaron R.	Allentown,	New Jersey,	Hansell & Bro.

Davis, Henry H.	Crosswicks,	New Jersey,	J. A. Cantrel.
De Huff, John G.	Lebanon,	Pennsylvania,	Charles Shivers.
Detwiler, H. J.	Bethlehem,	"	Jn. Reakirt & Co.
Dickerson, Walter.	Philadelphia,	"	S. Creadick, M.D.
Dinning, Henry H.	Buffalo,	New York,	M. Marshall.
Dosch, Benton G.	Chambersburg,	Pennsylvania,	T. A. Lancaster.
Eberhard, Oliver,	Philadelphia,	"	S. Rosenberger, M.D.
Eddy, George,	"	"	Jos. K. Culin.
Ellis, Wardle,	Media,	"	W. T. W. Dickerson.
Emerick, W. B.	Philadelphia,	"	Jn. Reakirt & Co.
Eyster, C. E.	Chambersburg,	"	C. H. Cressler.
Finch, Charles L.	Philadelphia,	"	
Finlay, J. P.	"	Mississippi,	
Fox, Francis,	"	Pennsylvania,	James N. Marks.
French, H. B.	"	"	Wm. B. Webb.
Fritchey, James G.	Lancaster,	"	E. B. Garrigue.
Fritz, Carl,	Philadelphia,	"	C. H. Needles.
Gerhard, A. F.	"	"	E. Gaillard.
Gilmour, Wm. D.	"	"	Geo. Y. Shoemaker.
Grebe, Wm. H.	Wilmington,	Delaware,	Wm. M. Reilly.
Groff, C. L.	Philadelphia,	Pennsylvania,	S. Gerhard.
Guy, G. Omar,	Chicago,	Illinois,	J. Kenworthy.
Hancker, Wm. M.	Philadelphia,	Pennsylvania,	C. Carter, M.D.
Hand, Charles,	Burlington,	New Jersey,	W. R. Warner.
Hansell, Wilmot,	Philadelphia,	Pennsylvania,	Hansell & Bro.
Harry, John W.	Conshohocken,	"	Jas. W. Harry.
Hartman, J. Marion,	West Chester,	"	C. M. Crowell.
Hassinger, S. E. R.	Philadelphia,	"	J. S. Conner.
Helfrich, Llewellyn,	"	"	B. F. Hansell, M.D.
Hethrington, Thomas,	"	"	Wetherill & Bro.
Heyl, T. W.	"	"	I. C. Heyl.
Hillebrand, Lewis,	"	"	A. Alburger, M.D.
Holstein, Charles E.	Norristown,	"	G. M. Holstein, M.D.
Hokinson, J. T.	Chambersburg,	"	D. S. Jones.
Huddart, Jno. F.	Louisville,	Kentucky,	D. W. Yandell, M.D.
Hunter, Thomas,	Philadelphia,	Pennsylvania,	R. Keys, M.D.
Husband, Thomas J., Jr.	"	"	Thos. J. Husband.
Hutchings, Otway E.	New Orleans,	Louisiana,	J. W. Smith.
Hutchison, Hamilton,	Philadelphia,	Pennsylvania,	J. T. Shinn.
Isard, G. W.	"	"	W. Macpherson.
Jennings, Robert,	"	"	W. J. Jenks.
Jones, D. Augustus,	Mount Holly,	New Jersey,	W. Notson, M.D.
Jungmann, Julius,	Philadelphia,	Pennsylvania,	J. M. Maisch.
Keister, Wm. A.	Huntingdon,	"	John Read.
Kelly, Clement,	Salem,	New Jersey,	A. W. Wright.
Kennedy, George W.	"	Pennsylvania,	Wm. McIntyre.
Kervey, H. R.	West Chester,	"	W. F. Patterson, M.D.
Knipe, E. P.	Philadelphia,	"	C. Ellis, Son & Co.
Kolp, C. H.	"	"	A. Tate.
Kraft, Norman A.	"	"	C. Ellis, Son & Co.
Krewson, Wm. E.	Abington,	"	Geo. C. Bower.
Krider, Lewis,	Philadelphia,	"	Bullock & Crenshaw.
Lamparter, Eugene,	"	"	F. Fleibel, M.D.
Le Foutillier, R.	"	"	
Leary, James F.	Nashville,	Tennessee,	
Leedy, Wm. B.	Memphis,	"	Henry C. Steever.
Lee, Charles S.	Bridgeton,	New Jersey,	S. L. Diks.
Lee, Lamm R. H.	Moretown,	"	S. S. Bunting.
Lehman, Walter,	Philadelphia,	Pennsylvania,	Deates & Miller.
Lichtapp, Thos. J.	Allentown,	"	A. P. Brown.
Lott, Samuel,	Philadelphia,	"	Wright & Siddall.
Lukentach, Ed. H.	Bethlehem,	"	C. Ellis, Son, & Co.
McGuire, Geo. W.	Trenton,	New Jersey,	R. Shoemaker & Co.
McKclway, George,	"	"	O. S. Hubbell.
McLaughlin, J. T.	Princeton,	Illinois,	A. H. Yarnall & Co.
McLean, Wm. J.	Philadelphia,	Pennsylvania,	A. H. Yarnall & Co.
Maize, Charles,	Ashland,	"	Wm. M. Wilson.
Martin, Andrew P.	Lewistown,	"	Wyeth Bro.
Merklein, Charles H.	Chambersburg,	"	
Mingle, Tucker,	"	"	C. P. Strode.
Morhead, Wm. W.	Germantown,	"	C. E. Davis.
Moylan, Cornelius,	Conshohocken,	"	J. W. Barry.
Munzinger, P.	Philadelphia,	"	
Ottinger, J. J.	Mount Holly,	New Jersey,	O. S. Hubbell.
Owen, B. H.	Lebanon,	Tennessee,	
Owen, John D.	Louisville,	Kentucky,	Owen & Sutton.

Painter, Edward C.	Wilmington,	Delaware,	Smith & Dixon.
Parker, Joseph,	Beverly,	New Jersey,	C. Ellis, Son & Co.
Patton, Daniel,	Burlington,	"	F. Brown, Jr.
Pawling, Geo.	Montgomery Co.,	Pennsylvania,	Wetherill & Bro.
Paxson, Elliott D.	Philadelphia,	"	E. Parrish.
Peabody, Frank H.	Waterloo,	Iowa,	A. H. Yarnall & Co.
Peck, Aulay,	Philadelphia,	Pennsylvania,	Peck & Co.
Peurose, Stephen F.	Quakertown,	"	B. Smedley.
Pfromm, Adam,	Philadelphia,	"	A. Wiltberger.
Phelps, Frederick H.	Jackson,	California,	Elliot, White & Co.
Phillips, Jacob C.	Burlington,	New Jersey,	Ambrose Smith.
Porter, Wm.	Philadelphia,	Pennsylvania,	
Price, Ferriss,	"	"	C. Ellis, Son & Co.
Procter, Wallace,	"	"	Wm. Procter, Jr.
Raber, Francis,	Lebanon,	"	C. W. Hancock.
Rambo, Milton,	Chester,	"	M. H. Bickley.
Rau, Eugene A.	Bethlehem,	"	J. M. Maris & Co.
Raukin, Robert F.	Bellefonte,	"	F. Brown.
Read, Charles B.		New Jersey,	Wyeth & Bro.
Reitsnyder, Evans F.	Philadelphia,	Pennsylvania,	Beates & Miller.
Reynolds, John J.	Chambersburg,	"	J. T. Shinn.
Richards, Augustus,		New Jersey,	French & Richards.
Richards, U. F.		"	French & Richards.
Richards, Marcus D., Jr.	Lexington,	Kentucky,	
Ridgway, W. T.	Mount Holly,	New Jersey,	Wyeth & Bro.
Roberts, Charles E.	Philadelphia,	Pennsylvania,	Hance, Griffith & Co.
Robertson, Henry E.	"	"	F. Brown, Jr.
Robinson, James S.	"	"	A. B. Taylor.
Rowand, J. R., Jr.	Barry,	Illinois,	J. R. Rowand.
Saylor, John,	Pottsville,	Pennsylvania,	W. M. Wilson.
Schall, Alexander,	Norristown,	"	Gilbert & Royal.
Segrest, L. F.	Philadelphia,	"	G. M. Snowden.
Sharp, Robert C.	Pennington,	"	Thomas Gordon.
Shoemaker, C. F.	Philadelphia,	"	French & Richards.
Simmons, F.	Luka,	Missouri,	
Smith, Henry,	"	"	G. D. Blomer.
Smiler, Edward P.	Media,	"	
Snickman, Charles,	Peoria,	Illinois,	
Stein, Jacob H.	Annapolis,	Pennsylvania,	John Bley.
Sterne, Wm.	Williamsport,	Maryland,	
Stoyell, Smith,	Moravia,	New York,	
Stretch, Charles T.	Salem,	New Jersey,	J. R. Lippincott & Co.
Stretch, David E.	"	"	J. Thornton Weaver.
Supple, J. L.	Philadelphia.	Pennsylvania,	J. B. Moore.
	"	"	
Taylor, Harry B.		New Jersey,	W. T. Taylor, M.D.
Taylor, W. G.		Pennsylvania,	R. G. Taylor, M.D.
Thomas, John S.	Norristown,	"	C. Ellis, Son & Co.
Tomasovich, Leopoldo,		Cuba,	A. B. Taylor.
Tompkins, Wm. A.	Philadelphia,	Pennsylvania,	G. Ashmead.
Treichler, L. A.	McKeansburg,	"	C. L. Eberle.
Unzicker, Chas. B.	Cincinnati,	Ohio,	
Viley, John T.	Lexington,	Kentucky,	Whitney & Co.
Wallen, Jarvis R.	Bridgeton,	New Jersey,	H. C. Blair's Sons.
Waltz, Edward B.	Philadelphia,	Pennsylvania,	J. M. Buddy.
Ware, Frank,	Salem,	New Jersey,	
Ware, Samuel F.	Bridgeton,	"	C. L. Cummings.
Warrington, Ed. C.	Philadelphia,	Pennsylvania,	Bullock & Crenshaw.
Weber, Wm.	"	"	G. W. Eldridge.
Webster, B. Clay,	Haddonfield,	New Jersey,	J. R. Stevenson, M.D.
Weurich, Alfred B.	Myerstown,	Pennsylvania,	M. Marshall.
Westerman, Jos. F.	Philadelphia,	"	J. S. Erten.
Wetherill, S. P.	"	"	Wetherill & Bro.
Weymer, H.	"	"	C. Ellis, Son & Co.
White, Eliza,	"	"	L. Martin & Co.
Wilhelm, J. Alex.	York,	"	I. H. Kay.
Willard, R. Jr.	Haddonfield,	New Jersey,	I. A. Braddock.
Wills, Edmund T.	"	"	J. L. Bispham.
Wilson, Edwin K.	"	"	T. R. Coombe.
Wingard, Chas.	Philadelphia.	Pennsylvania,	Edwin Thomas.
Wolfe, Isaac G.	"	"	Charles Shivers.
Wolff, Edwin.	"	"	J. Reakirt & Co.
Worthington, J. W.	"	"	S. Mason McCollin.
Young, John,	"	"	Milner, M.D.

THE
AMERICAN JOURNAL OF PHARMACY.

MARCH, 1869.

HISTORICAL MEMOIRS OF THE PHILADELPHIA COL-
LEGE OF PHARMACY. (PART I.)*

BY PROF. EDWARD PARRISH.

It must have been in the first or second month of the year 1821 that Peter K. Lehman, one of the old-school of Philadelphia druggists, whose business was located on the south side of Market street below Tenth street,† called in, one day, as was his wont, at the store of his neighbor, Henry Troth, then a thriving wholesale druggist on Market street below Seventh street,‡ and the two worthy druggists had a conversation of no little interest to us, as it seems to have led to the establishment of this College of Pharmacy.

Their talk grew out of the fact that the Trustees and Faculty of the University of Pennsylvania had but recently determined to extend their sphere of operations by teaching and graduating young apothecaries, and giving to the more respectable already established a title of honor corresponding somewhat to that of Doctor of Medicine, conferred upon physicians. The University did, indeed, proceed so far as to confer the degree of Master of Pharmacy upon sixteen of the apothecaries in the city, (April 5th, 1821) and one or more of these, trading in the immediate neighborhood, paraded this newly acquired title upon sign-boards and in the City Directory, to the great disgust of competitors.

The project of teaching the apprentices in the stores at the rather unsuitable and very unseasonable lectures in the University met with no favor on the occasion I have alluded to. "Henry, this won't do," said Peter Lehman; "the University

* Extracted from the Introductory Address at the opening of the School of Pharmacy, Oct., 1868.

† Old No. 320.

‡ Now No. 630.

have no right to be taking our boys away at noon to make them M. P.'s'' Henry Troth was a man of ideas, a man of enterprize, and the indignation of his neighbor and customer at this assumption of the doctors to teach, examine, and perhaps in some degree suborn the independent guild of druggists and apothecaries, gave rise to the inquiry, "Why can't we have an Institution of our own, train our own apprentices and ourselves, supervise the qualifications of those seeking admission to our ranks?"

The suggestion seemed both timely and wise, and the two friends, full of their new idea, sallied forth to wake up their neighbors to its importance. The story goes that they called on some of the wholesale druggists first, as being generally men of some wealth and enterprize, not forgetting the retailers, however, as having perhaps most interest in the matter.

They were the right men for the work. Everybody they called on, but one or two prospective Masters of Pharmacy, took hold at once; so a meeting was called. The minutes of this meeting begin thus: "At a Meeting of the Druggists and Apothecaries of the City and Liberties of Philadelphia, held at Carpenter's Hall, February 23d, 1821, agreeable to notice, Stephen North was called to the chair and Peter Williamson was appointed Secretary."

Let us pause here to take note of the place of meeting. Carpenter's Hall is second only to Independence Hall in its historic interest, as connected with the stirring events by which the United Colonies of North America emerged from colonial dependence to a separate and equal place among the nations of the earth. This ancient building was first occupied by the Carpenter's Company, founded in 1724, by whom it was built in 1771. The Library Company of Philadelphia deposited their library in the second story in 1772, where it remained till 1790, when it was removed to the more commodious building in south Fifth street. The Apprentice's Library afterwards used the same room for seven years. This building was used as a banking house by the Bank of the United States from 1791 to 1797, and subsequently by the Pennsylvania Bank and United States Custom House. But the chief interest connected with Carpenter's Hall arises out of its having been occupied in 1774

by the Provincial Assembly, which recommended a general Congress of all the American Colonies, which Congress also met in this Hall, and in it inaugurated those measures which, after the perils of the Revolution, terminated so favorably for civil liberty in America and throughout the world. Here also assembled, in 1787, that convention of wise and far-seeing statesmen which framed the Constitution of the United States of America.

At the first meeting of the Druggists and Apothecaries of Philadelphia, the resolutions of the Board of Trustees of the University to which I have referred, and which had already appeared in Poulson's American Daily Advertiser, were read as follows :

Resolved. 1st, that the degree of Master of Pharmacy be and it is hereby instituted, to be conferred hereafter by the Trustees of this University on such persons exercising or intending to exercise the profession of apothecary as are and shall be duly qualified to receive the same.

2d. That the faculty of medicine be requested to report to this Board at the next meeting a proper form of diploma, and also a list of such apothecaries in the city and liberties of Philadelphia as are desirous and, in their opinion, deserving of obtaining the degree of Master of Pharmacy ; and unless sufficient reason to the contrary shall appear the degree of Master of Pharmacy shall be conferred on such individuals respectively.

3d. That every person who shall have served a regular apprenticeship, of at least three years, with a respectable apothecary,—a Master of Pharmacy—and who shall exercise the profession of an apothecary in this State or elsewhere, may, on application to this Board, obtain the degree of Master of Pharmacy ; *provided*, he shall produce a certificate of the faculty of medicine, signed by the Dean thereof, of his being qualified to receive the same, which certificate the faculty may grant on the attestation of the Professors of Chemistry, Materia Medica and Pharmacy who shall have examined the candidate, and also a certificate of his good moral character.

4th. That in future it shall be requisite, for obtaining such degree, that the candidate shall have attended at least two courses of lectures on Chemistry, Materia Medica and Pharmacy in this University.

Two sets of resolutions of like import were offered at this apothecaries meeting; those proposed by Henry Troth were adopted. They respectfully set forth that the method proposed by the Trustees of the University is not suited to correcting the alleged abuses in the drug and apothecary business, and direct the appointment of a Committee to report on the subject to a future meeting.

This Committee consisted of nine persons, as follows :

Samuel Jackson, Daniel B. Smith, Robert Milnor, Peter Williamson, Stephen North, Henry Troth, Samuel Biddle, Charles Allen, Frederick Brown.

In those days the Professor of Materia Medica in the University was Dr. John Redman Coxe, a man of very considerable learning and vigorous intellect, though singularly deficient in qualifications for a teacher. He was doubtless the leading spirit in this new movement of the Trustees, which, however distasteful to the druggists and apothecaries, had a certain ground of reasonableness, and, as the event proved, had the happy effect of calling the attention of those most directly interested to the needs and requirements of the trade.

There are few problems in history so difficult as to trace the real relations of men who have been actors in its important changes, to those changes themselves. Events which might seem to be the results of the exertions of one man or one party often have arisen from manifold causes, some of which are quite beyond human ken.

Dr. Coxe and his colleagues appear to have perceived what had been, long before, appreciated and acted upon in Europe—that the trade of the druggist and apothecary involving peculiar responsibilities, and being inseparably connected with chemical processes and with many delicate manipulations connected with vending and preparing potent agents for the treatment of disease, is one demanding scientific and practical education of a peculiar kind.

Previous to 1821, in this new country with its sparse population and vast territorial extent—its few small but growing cities scattered along the sea-board—the occasion had scarcely arisen to put in practice the obvious educational means fitted to these

requirements; but now the time had evidently come. Every intelligent druggist and apothecary who appreciated this could see also that instructions which might be considered suitable for the student preparing himself for the duties of the physician would be only partially fitted for one who was to assume the widely different responsibilities of the drug store and dispensary.

There was, moreover, among the public spirited men upon whom Henry Troth and Peter Lehman called to talk over this newly awakened want, a feeling that such associated action as they proposed would bring strength and mutual support to those engaged in the same laborious and responsible pursuit, and needing each other's aid and counsel. By such association abuses might be held in check or corrected, the common interests subserved and the whole trade elevated in the estimation of its members and of the public.

Postponing further remark in this direction, let us turn to the minute book, where, under date March 13th, 1821, we find the minutes of the second meeting. The aforesaid Committee now made a report, too long for the purposes of this address, setting forth that abuses had crept into the drug and apothecary business; instances had occurred of deteriorated drugs being introduced into the shops, and valuable remedies in daily use being adulterated and sold of inferior quality; such abuses, attributable in part "to want of proper pharmacological information on the part of some druggists and apothecaries who vend and of physicians who buy," had attracted the attention of those interested in the proper conduct of the trade, and had led some druggists and apothecaries, at the suggestion of one of the Faculty of Medicine in the University, to direct the attention of the Trustees to the subject, in consequence of which they have taken the action reported at the previous meeting. It was, however, apparent that the measures proposed by the University were not well adapted to correct existing irregularities, which could best be remedied by "the interposition and active agency of the druggists and apothecaries themselves."

To this end the formation of a College of Apothecaries was recommended, "the attention of which will be constantly directed to the qualities of articles brought into the drug market,

in which subjects relating to their business and its objects can be discussed, and information beneficial and instructive to the trade communicated." It was also proposed to erect a School of Pharmacy, in which lectures designed especially for the instruction of druggists and apothecaries should be delivered.

This Committee also produced a Constitution for such College, which was approved and signed by those present. Two weeks thereafter the first stated meeting was held and officers were elected. Under date of March 21st, 1822, we find a resolution adopted changing the name of the College to the Philadelphia College of Pharmacy, and at the next meeting an Act of Incorporation, duly authenticated by Joseph Lawrence, Speaker of the House of Representatives, William Marks, Jr., Speaker of the Senate, approved March 30th, 1822, by Joseph Heister, Governor of the commonwealth of Pennsylvania, was read and accepted by the newly constituted body politic.

The first President of the College was Charles Marshall, who was born in Philadelphia in 1744, and having had a good English and classical education entered into partnership with his father, Christopher Marshall, who was a druggist on the south side of Chestnut street above Second street. Charles Marshall soon became master of one of the leading stores in the city, and by scrupulous probity of character, combined with great urbanity of manners, secured the respect and affection of a large circle of friends and customers. After being many years in business and acquiring an ample competence, he resigned its cares to his son, though, unfortunately, still retaining his connection with the firm, which, through imprudence, became involved in bankruptcy, after its senior member was far beyond the period of life at which he could himself repair his fortunes.

In 1804, his daughter, Elizabeth Marshall, a lady of singular good sense and business ability, took the shattered business in hand and built it up with great success, supporting the family and regaining for them a position of independence. The old store, at 56 Chestnut street, afterwards passed into the hands of Ellis & Morris, who were the immediate predecessors of Charles Ellis & Co. In this establishment some of our older

members were brought up, who now delight to recall their recollections of Charles Marshall—"his tall and slender form, clear complexion, blue eyes, graced with a benignant expression of countenance, heightened in its effect toward the close of life by the snowy whiteness of his hair, which in ample volume descended nearly to his shoulders. His costume was uniformly plain and equally uniform in color, being the drab then in vogue with the Society of Friends, of which he was a consistent and life-long member."

This graphic description by one who shared his society has been placed on record by the College; on a previous occasion, it is again introduced as the best substitute we have for such a portrait of our first President as we all would desire to see gracing the walls of our New Hall.*

This venerable man, in a communication addressed to the College, dated 12 mo. 30, 1823, resigned his office of President, urging his advanced age and defective hearing as reasons for desiring to be relieved of its cares, but offering his best wishes for the prosperity and success of the institution.

At the following annual meeting, the choice fell upon William Lehman, formerly First Vice-President, as his successor. As I find no biographical notice of this early officer of the College upon its minutes, I think this a favorable opportunity to place upon record some account of him and of his cousin Peter K. Lehman, already introduced in this essay. These gentlemen were both descended from Godfryd Lehman, who came to this country from Saxony and settled in Germantown in 1731.

William Lehman was born in Philadelphia 14th of September, 1779. His grandfather, Christian Lehman, is spoken of as an accomplished linguist, astronomer and mathematician, a friend and correspondent of David Rittenhouse. William Lehman was educated in the University of Pennsylvania, where, after going through the literary course, he applied himself to the study of medicine and received the degree of Doctor of Medicine. He did not, however, practice that profession, but entered into the drug business, in which his father George Leh-

* See Memoir of Charles Marshall by Dillwyn Parrish, *American Journal of Pharmacy*, Vol. xxxvii, page 241.

man had been previously engaged on Second street between Arch and Race streets.*

The father of William Lehman died when he was quite young, leaving him considerable property, which was increased by his own success in business. He commenced about the year 1802, at No. 97 south 2d street, from whence he removed in about four or five years to No. 76 S. 2d street, (old numbers) below Chestnut street. Here the business was conducted with partners, under the peculiar title William Lehman, William Smith & Son. After eight or ten years the firm became Lehman & Smith, and about 1819 was dissolved, William Lehman remaining alone till about 1822, when he took into partnership Algernon S. Roberts, a name held in kind remembrance in our College for his bequest of funds to maintain our library and cabinet.

William Lehman was a studious and industrious man, a Latin, French and German scholar, and visited Europe several times. A warm advocate for the internal improvements of Pennsylvania, he was elected to the State Legislature in 1814, and re-elected for 15 years, having always in view the prosecution of these great works which he lived to see commenced but not completed. It was in the capacity of a legislator that he was enabled to serve the infant College of Apothecaries. He obtained the charter, and it is said took the liberty, on his own responsibility, of altering the title, from the College of Apothecaries to the College of Pharmacy, a more euphonious and more appropriate name, thus compelled our unassuming "apothecaries" to get together and sanction the change. Wm. Lehman was taken ill at Harrisburg and died there on the 29th of March, 1829, in the 50th year of his age.

He was a bachelor, and left a legacy of \$10,000 (a more considerable sum in those days than now,) to the Philadelphia Athenæum for building a hall, which was "nursed" with care

* The name of Lehman has been much connected with drugs in our city. Dr. John Lehman was in full practice in 1785, residing at No. 16 Key's Alley (New street) and about the same time Joseph Lehman was in business as an apothecary, at No. 73 N. 3d st. In 1824 Wm. E. Lehman was a druggist at 77 Lombard street. Dr. George F. Lehman was Physician to the Lazaretto.

until more than doubled, and in 1845 invested with other funds in their present elegant and substantial building on south Sixth street.

Peter K. Lehman, as I have said, was at the date of this narrative located on Market street below 10th street. Not so prominent in public affairs as his cousin, he was a useful member and trustee of the College, often appointed on its committees. He was born in Germantown, June 16th, 1787, was brought up in the store on south Second street, of which I have just given the history, and after an honorable career retired from business and ended his days Nov. 17, 1846, in the house still occupied by his daughter and son-in-law, Hymen Lipman, No. 136 N. 10th st., nearly opposite our new hall.

It is perhaps fitting that I should say a word here of Stephen North, Chairman of the first meeting, and Second Vice-President of the organization. He is represented by those who remember him as a worthy and even superior wholesale druggist, doing business on Second street, a few doors south of Christ Church.*

He afterwards removed to the N. E. corner of 6th and Market streets, but did not live many years after his removal. Under date of 9th month, 1826, the minutes of the College contain a notice of his death, with a resolution expressing the deep regret of his fellow members at his loss, and bearing testimony to the value of his services in founding the College, and his faithfulness to its interests until removed by death from the station of honor and usefulness which he held among its members.

Daniel B. Smith next succeeded to the Presidency. He was one of the original members who was instrumental in imparting a scientific character to the College; the business men who were active in its affairs were numerous, the men of science few. At this period he was in active business at the N. E. corner of Sixth and Arch street, a stand which he established, afterwards associating with him William Hodgson, Jr., then fresh from the store of John Bell, Oxford street, London, where he was associated as an apprentice with the since eminent Jacob Bell, Robert Alsop, and Prof. Theophilus Redwood, all lights in the London

*No. 14, N. Second street, says the directory of 1824.

Pharmaceutical world. The firm of Smith & Hodgson were the direct predecessors of Bullock & Crenshaw.

Motives of delicacy preclude my saying much in this discourse of those who are still living among us, honored representatives of that band of pioneers who laid broad and deep the foundations of our College. Peter Williamson, the first Secretary, still a participant in our proceedings and a warm friend of our organization, Charles Ellis, for 14 years Secretary, now our respected President, and George D. Wetherill, are, I believe, with Daniel B. Smith, the only remaining members who signed the constitution at the first organization of the College of Apothecaries.

The present sketch would, however, be very incomplete without a notice of Henry Troth, already spoken of in connection with the first steps taken toward the organization of the druggists and apothecaries of the city. He was born in Talbot County, Md., and after such education as his circumstances afforded, was placed in the drug store of Jeremiah Morris, on the north side of Market street below 8th street. Near the close of the war of 1812 he embarked in business, and by industry and economy reached success. He was a leading spirit in the College for more than 20 years; for 13 years Vice-president, at a time when the President was seldom in attendance; he presided at the meetings with dignity and impartiality. He was seldom absent from his post, and at his death, in the summer of 1842, strong testimony was placed on the records of the College to his high moral worth, combined with kindness and courtesy of manner and many estimable traits of character.*

It may not be uninteresting, as illustrative of the progress of the times, to note his agency in the introduction of gas for illumination, into our city. He was for 13 years a member of the Common Council, (long before consolidation) and part of the time its President. The project of lighting the city with gas met with many objections; among others equally absurd, that the water would be contaminated by the vicinity of the iron water pipes to those through which the gas would be conducted under

* See also Memoir, Am. Journ. Ph., Vol. xviii, p. 90.

the streets. Henry Troth urged the improvement strongly, but it was only successful when, contrary to his judgment, a company was chartered for the purpose, who, after erecting the works and laying the pipes, sold out to the city at an advance of 25 per cent.

Henry Troth was one of the first in Philadelphia to burn anthracite coal, in a grate which was in his parlor over the store. About the year 1819 his grate was erected, but it was taken down and rebuilt several times before the intractable "stone coal" would burn satisfactorily. Many incredulous ones who called to see the experiment went away discouraged, because they said they could not supply fresh air as he had done by a hole through the hearth. How strongly this appears in contrast with the now fast returning fashion of open grate coal fires in rooms used as common sitting or living rooms, in city and country.

Samuel F. Troth, the younger brother and partner of Henry, who I shall have occasion to mention again in the course of my narrative, though not an original member of the College, being a year too young in 1821 to be enrolled as such, has given his attention to its affairs for 46 years with a constancy and regularity unequalled by any of his colleagues, and it is due to his own retiring character that he is not now, as formerly, a recipient of its honors, as he is of its thanks and grateful acknowledgements for services rendered.

The first years of the College were marked by great activity, in which many of the members participated. Committees of inspection were appointed to examine drugs introduced into the market, and to expose adulterations and sophistications. Latin labels were printed, carefully adapted to the officinal standard of nomenclature. Formulas were published for the old English remedies called "patent medicines," then very extensively sold, with a view to greater uniformity in their composition and properties; and the absurdly worded wrappers in which these were enveloped, giving false or exaggerated accounts of their virtues, were measurably superseded by more sensible and truthful "directions," published by authority of the College for the supply of the trade. Meanwhile a library was being formed, a

cabinet of specimens collected, and the various improvements in chemistry and pharmacy suggested from time to time were investigated and reported upon by the members.

THE PARIS EXPOSITION OF 1867.

BY THE EDITOR.

(Continued from page 13.)

THE ENGLISH SECTION.—One of the most remarkable groups in the whole Exposition (though not in class 44) was that of Messrs. Johnson Matthey & Co., of Hatton Garden, London, which, from its connection in many ways with chemical manufacturing, we will notice here. The display consisted of platinum apparatus of various kinds, from immense stills capable of concentrating eight tons of oil of vitriol per diem, to the smallest crucibles, tubes, foil and wire; specimens of rare metals, metallic salts and a few minerals, the entire collection valued at \$100,000. The largest still was valued at \$12,500 in gold, the smaller \$8,200. Each still was furnished with a decanting and cooling syphon, by which its contents, when properly condensed, could be at once drawn off into carboys. The metal used in this apparatus is of great purity, being melted by the process of Deville, (really that of Dr. Hare, by the oxhydrogen blow-pipe). The chief merit of these stills consisted in the avoidance of gold solder joints, which, from variation in expansibility or for electrical reasons, are more disposed to give way than other parts. Each boiler is a single piece of metal, made by hammering and fusing the joints with the blow-pipe by the autogenic method, just as plumbers join leaden apparatus by fusing the edges together, so as to have a continuous platinum surface throughout, an advantage over solder-joints, easily appreciated by manufacturing chemists. A single ingot of fused platinum valued at \$5500, used in making the smaller still boiler, was shown. A platinum alembic, used for refining gold and silver salts, suitable for mint refineries and for chemists, was exhibited, worth \$1500. These platinum vessels, though expensive at first, effect a great economy in the long run, by avoiding loss from breakage of glass and porcelain. Platinum tubes of all sizes, with platinum joints, crucibles, spatulas, foil and wire; but the most attractive object to the chemist was the remarkable display of the rare metals, among which were rhodium, iridium, osmium, ruthenium, magnesium, thallium, chromium, titanium and manganum. Supplementary to these was a collection of metals in cylinders of the same diameter and weight, but the length of each varied with its specific gravity, each cylinder weighing a kilogram, (over two pounds av.), showing on what a magnificent scale these metallurgists got up their display. The length of each cylinder was of course in ratio to its specific gravity, the lighter metals being long and the heavier short. They were contained in glass tubular vessels and

consisted of gold, silver, platinum, iridium, rhodium, palladium, lead, bismuth, copper, cadmium, cobalt, nickel, iron, antimony, zinc, magnesium, aluminium, thallium, sodium, potassium and mercury.

The sodium amalgam of Mr. Crookes, now so advantageously used in extracting gold from its gangue, and the discovery of which is disputed by a gentleman of New York, was shown. In contemplating this noble collection we were forcibly impressed with the wonderful progress made in the working of platinum since the days when the world depended on the then secret process of Wollaston. Among a few fine specimens of silver and gold salts shown by this house, was a sample of pure hydrate of soda made by the combustion of sodium, which these gentlemen aver is cheaper than when made of equal purity by the ordinary processes.

Another interesting collection was that of Howard & Sons, London, which embraced more than 150 samples of cinchona barks of all grades, including a series, in tall glass bottles, of barks from the Cinchona plantations, of India, with the results of their analysis, each bark being accompanied by its alkaloid. Mr. John Eliot Howard, one of the firm and author of a work on Quinology, and widely known as a promoter of all that relates to the Cinchona culture, has made annual reports to the government on the alkaloidal value of the India bark. Owing to the bad arrangement of many specimens in this collection as to position and distance from the observer, many were disappointed in learning its true interest. Besides their bark products, which included quinia, quinidia, cinchonia, cinchonidia and aricina, with many of their salts, such as the double gold and platinum salts, this firm exhibited tartaric and citric acid in fine crystals and purity. Benzoic acid from benzoin, Rochelle salt, bromine and iodine salts, a sample of ammoniacal salts of volcanic origin from Italy, and a few opium products. The peculiar character and great representative value of this collection obtained for it a gold medal.

We were much interested in the case of T. & H. Smith, Pharmacologists, of Edinburgh. Being one of the central range of cases, its contents were seen to better advantage. The item first in interest was the new alkaloid cryptopia, of which they exhibited a fine crystallization in minute acicular prisms studding a dish, the product of a vast quantity of opium, residues in which it exists in very small proportion, (see vol. 39, page 421 of this Journal). This firm have a habit of bringing out chemical novelties on the occasion of international exhibitions. In 1851 aloin was their novelty; in 1865, at Dublin, thebolactic acid was exhibited, and in 1867, cryptopia. Thebolactic acid in a free state, as now presented (1867) is a light brownish-colored liquid, probably not chemically pure. Very creditable specimens of muriate of papaverina, meconin, codeia and nitrate of furfural an (alkaloid discovered by Prof. Fownes, a derivative of furfurole, obtained from bran by the action of sulphuric acid, originally obtained by Mr. Morson) and of caffein, can-

tharidin and essential oil of coffee were also noted. This firm have the reputation of doing things well, and their collection accords with that view.

The case of Morson & Son embraces several opium products, physostigmin, some yellow podophyllum resin, (probably containing berberina) the brown commercial resin and samples of the pancreatized fat of Dr. Dobell, and of saccharized wheat phosphates, the latter a preparation prepared from wheat, containing the non-amylaceous portions more particularly. This case also contained a small specimen labelled methysticin, from Piper methysticum, of the Pacific Islands, claimed to have been discovered by Mr. Morson. In the *Journal de Pharmacie*, for Jan., 1860, M. Gobley, of Paris, claims the discovery of the same principle, (see page 133, vol. xxxii, of Amer. Jour. Pharm.). Whether Mr. Morson has priority we do not know.

The case of Wm. McFarlane, of Edinburg, was well worth examining, containing chiefly opium products. The specimens of crystallized codeia and its acetate were particularly fine, the acetate of morphia very white, two other salts of codeia, papaverina, narecia, narcoïina and its derivative cotarnia, with other derivative products of narcotina by Dr. Matthiesson, (since noticed by Mr. Brough, in the proceedings of the Conference at Norwich).

The carbolic acid industry was chiefly represented by Manchester firms, F. C. Calvert & Co., C. Lowe & Co., and Lewis Demuth & Co. This wonderful substance, which every year seems to develop into wider and wider utility, is at present one of the most important of chemical products. Until quite recently pure carbolic acid was hardly known, and largely through the influence of Mr. F. C. Calvert the pure acid has become almost as common as spermaceti. The practical problem thus solved, so far as it applies to the coal tar product, has involved a long period of trials and failures, with a gradual approach to success since 1848. The pure carbolic acid in long distinct crystals was exhibited by Calvert & Co., quite free from cresylic acid. They also showed carbazotic (picric) acid, derived from carbolic acid by the action of nitric acid, now much used in silk dyeing, and an impure form of the same acid called *aurine paste*.

Messrs. Lowe & Co. exhibited a mass of crystallized carbolic, weighing near two hundred pounds, with the centre hollow and studded with crystals, just as spermaceti is sometimes seen, and so pure that it was not discolored or liquified. Picramic acid was also shown. M. Runge, when he discovered carbolic acid in 1834, little thought it would some day become so important to humanity, and only after numerous and oft repeated experiments has its history been worked out and determined.

Lewis Demuth & Co., of the Springfield Chemical Works, exhibited naphthalin, benzole, toluole, carbolic, cresylic and xylic acids, cumol, cymol and xylol.

The alkali manufacture, for which England and Scotland are so justly celebrated, was not so well represented as it deserved to be. Those who took part were Messrs. Allhusen & Co., the Walker Alkali Co., of New Castle-on-Tyne, Chance & Sons, of Birmingham, well known in this country for the good quality of their bicarbonate of soda; Muspratt & Co., of Liverpool, the Jarrow Company of South Shields, and W. Gossage & Son, Widnas, near Warrington, Soap Manufacturers. The latter house has adopted a process analogous to that of R. A. Tilghman's patent, by which they produce silicate of soda and other alkali products. The general feature of this process is to cause the mixed vapors of chloride of sodium and water to traverse an immense column 50 feet high and 8 feet in diameter internally, filled with flints and sand balls previously heated intensely by several gas furnaces constructed on Siéman's principle, at the base of the column, which is strongly built and lined with the best fire brick. The reaction results in the elimination of chlorine with the hydrogen of the water as hydrochloric acid, which passes off, and may be collected whilst the sodium taking its oxygen becoming soda seizes upon the silica of the flints, and as fused silicate of soda flows downward and is collected below. From this compound by the help of carbonic acid or lime the various soda products are made, and silica or silicate of lime, as the case may be, obtained as a valuable bye product. The practical points of difference between this method and Tilghman's, is in presenting the chloride of sodium in the state of vapor mixed with its decomposing agent steam, instead of incorporating it with alumina, and in the use of the silica as flint, which being attacked only on the surface, the removal of the resulting silicate in a liquid fused state is favored by its own gravity. Whether this and analogous processes will replace that of Leblanc in the great alkali works of Europe, remains to be seen. It was our good fortune, on calling at the St. Rollex Works, near Glasgow, in August, 1867, to be admitted, and to be conducted through the works by a young man connected with the establishment, for whose polite attention in explaining the various leading processes then in operation, we have always felt grateful. The great magnitude of the operations here conducted is the first most impressive feature that strikes the visitor, and in keeping with this the vast chimney stack, until recently the highest in the world, elevates its smoke evolving summit 460 feet above its base. (Within a few years past a yet higher chimney has risen on the north side of Glasgow). The kinds of manufacturing performed at these works are those which arise out of the alkali production which is the great central industry; for this the sulphur and pyrites of Italy and Spain and the alkaline nitrates of India and South America are used in generating thousands of tons of oil of vitriol, which in its turn is made to act on prodigious quantities of common salt, forming the crude sulphate of soda needed in an annual product of 40,000,000 lbs. of alkali. But in making this sulphate of soda immeasurable volumes of muriatic

acid gas are evolved, which if let loose in the atmosphere would blast the vegetation for miles around. To avoid this, the gas is fixed by passing it up a tall column of charcoal contained in stone towers, which is kept constantly dripping with water descending from above, and is received below as liquid muriatic acid, nearly of commercial strength. This acid would soon be as great an inconvenience to the fish as the gas is to vegetation, were it not utilized; hence arose the chlorinated lime manufacture—the muriatic acid affording an eligible source of chlorine when treated with oxide of manganese, which gas is then conducted into the extensive brick chambers in which the dry hydrated lime is placed on hurdles until the earth becomes saturated, becoming hypochlorite of lime and chloride of calcium. The atmosphere of the building in which these chambers were contained was so charged with chlorine and muriatic vapors as to be nearly insupportable to us, compelling a hasty retreat and nearly causing a spasm of the glottis, yet the operatives, engaged in various duties, did not appear to be inconvenienced, so kindly have our constitutions been moulded to our circumstances. The cost of the manganese in such immense quantities is great, hence has arisen a process patented by this firm whereby it is regenerated, which is conducted in an immense revolving cylinder. The still liquor, consisting of chloride of manganese and muriatic acid, is first neutralized with lime, then an equivalent of lime added, which soon precipitates the protoxide of manganese and becomes chloride of calcium. On the subsidence of the oxide the chloride of calcium liquid is drawn off and the bioxide of manganese regenerated by passing air through the apparatus, when it is ready for use, and much more active than the original native oxide, yielding twice as much chlorine with muriatic acid. Thus it is that the price of these important products is kept at a minimum by the wonderful economy now introduced into the soda process by using the bye products and recovering the manganese. We believe in some establishments, if not in this, the sulphide of lime in the alkali wastes after lixiviation is utilized by recovering the sulphur to be re-used in making sulphuric acid, leaving only the unavoidable waste of sulphur and manganese to be provided for besides the coal, lime and salt, which are very cheap.

Another very important auxiliary manufacture is that of soap, the alkali for which is used whilst yet liquid, thus saving much labor. Within the same extensive works they produce, by the aid of the cooper and carpenter, the vast quantities of casks and boxes needed to send their products into commerce.

But to return to the Exposition; druggists and sundry men were represented by the old and extensive house of Burgoyne, Burbidge & Squire, of Coleman Street, London, who presented a large display of pharmaceuticals and chemicals, generally of good quality. They claim to be manufacturers of chemical preparations and of essential and fixed oils, and articles representing these lines were exhibited. A very fine

mass of crystals of piperin was particularly prominent, and must have required great care in transportation. Capsules of various kinds and other strictly pharmaceutical articles were included, all arranged with great neatness and effect.

Davy Yates and Routledge, London, exhibited mercurials and other chemicals and various samples of drugs and pharmaceutical preparations.

The British Seaweed Co., of Glasgow, operating under the patent of E. C. Stanford, exhibited numerous specimens of their products. This patent claims to obtain nearly double the amount of iodine salts from seaweed that the old kelp process of open combustion yields. It consists in gathering and compressing the seaweed in solid cakes, which are then dried, packed into cylinders and carbonized, as in making pyroligneous acid from wood, thus securing the volatile products, tar and acetic acid, and after lixiviating the charcoal to remove the saline matter it (the charcoal) is found to possess great value for its decolorizing power. The saline matter is then obtained by evaporation, and the mother liquor containing the iodine salts is treated in the usual way for iodine.

Huskisson & Son, of London, had an interesting collection of chemical products of their manufacture, remarkable for their variety and the excellence of their crystallization. The iodine crystals were like bits of polished steel, one or two inches long. The iodides and bromides were, to say the least, very beautiful. Judging from their collection a very favorable estimate might have been drawn of the character of this firm.

Hopkins & Williams, of New Cavendish Street, London, exhibited fine specimens of glacial phosphoric acid, which looked like masses of fractured rock crystal, colorless and pure. Among the salts exhibited by this firm were double salts parallel with Rochelle salt, alum and tartar emetic, in which oxide of thallium replaced the potash in these salts. It would be interesting to know what effect this substitution had on their medicinal qualities. It was also in this case that Mr. Crookes, the first discoverer of thallium, deposited an ingot of that metal, and a sample of the crystallized thallium protected from the atmosphere by glass, the air being probably displaced by hydrogen gas. Thallium is one of the early results of spectral analysis, now so productive of wonderful probabilities in connection with astronomy.

H. B. Condry, of London, exhibited the permanganate solution known as Condry's disinfectant, so largely used in the hospitals, and specimens of other permanganates. It is said that a bottle of solution of permanganic acid in this collection in the early period of the exhibition exploded by its decomposition by sun light and fractured the glass case containing it.

Not the least pretentious collection was that of "Peter Squire, F.L.S., sole dispensing chemist to her Majesty the Queen," &c., &c. The specimens purported to represent the new British Pharmacopœia, (not published when the exhibition commenced). No particular merit was claimed for them except their novelty. Mr. Squire's course in bringing

them out prematurely, which he was enabled to do from his connection with the previous committee of revision has, been criticised. Among the curious specimens of printing brought away from the Exposition, not the least remarkable is one now lying before us, issued by Mr. Squire, in three languages, informing the visitors to class 44 what he had done as an advocate of pharmacopœial unity in bringing about the British Pharmacopœia, and in extending its usefulness.*

Savory & Moore, of Liverpool, exhibited pancreatic emulsions after Dr. Dobell's suggestion, gelatin discs, medicated with atropia, etc., and various other pharmaceutical preparations.

Allen & Hanbury's, of Plough Court, Lond., exhibited extract of meat from Australia and cod liver oil of their own manufacture. This house have been makers of this oil for more than twenty years, and extract it by a process similar to that suggested by M. Donovan, of Dublin. The fresh cod is brought to London, as abundantly witnessed in Billingsgate market. The extract of meat, for which they are agents, is made by Liebig's process in Australia, by Robert Tooth, of Sydney. The extract of meat sold by this firm is a soft extract, having a peculiar odor usual in such extracts retaining moisture, and analogous in character to that made by B. J. Crew.

Rufus Usher, of Bodicott, near Banbury, exhibited a remarkably beautiful specimen of English Rhubarb. The success of this culture renders it a matter of regret that the more medicinal species cannot be obtained.

William Ransom, of Hitchin, had a good display of extracts, herbs and volatile oils. Among the latter we noticed the oils of cloves, savin, cubebs, copaiba, wormwood, pimenta, chamomile, caraway and peppermint. He also exhibited scammony root from Smyrna, and elaterium of his own make. The pleasure and profit of our visit to the Exposition was materially lessened by not having access to the specimens, and except when the eye could decide, relative merit could not be satisfactorily determined by the visitor.

Essential oils were also exhibited by Condie Brothers & Co., of London, W. Holland, of Market Deeping, and L. Schlesinger, of London. Price's Candle Company, Battersea, London, exhibited various samples of their beautiful products, among which the most interesting was their pure glycerin, the pioneer of the pure distilled glycerin now produced so abundantly and cheaply in this country. Whilst it is very evident that the chemical interest of England and Scotland were by no means fully represented, no one could pass through this section without being pleased with the variety and solid character of the articles exhibited. These are but a portion of the exhibitors in the British Section of class 44, but they are the principal, and are all that our space will permit us to offer at present, intending to notice some of the German and other continental sections in our next.

ON GLYCERATE OF TAR.

BY J. B. MOORE.

This is an elegant and potent preparation of tar, and presents to the physician a very palatable and desirable form in which to administer that remedy. Being free from sugar it is for many purposes preferable to the syrup of tar. In all medicinal syrups in which the active ingredients bear so small a proportion to the saccharine matter which they contain, as is the case in such syrups as tolu, tar, &c., the sugar is frequently an objectionable element. These syrups being generally employed, owing to their excitant character in the treatment of chronic, bronchial and pulmonary affections, and to obtain their full remedial effects, it is often necessary that their use should be persevered in for a considerable length of time.

The prolonged use of such syrups in delicate, enfeebled and dyspeptic persons, is very liable to offend the stomach and disturb the digestive functions, producing a feeling of oppression and uneasiness, accompanied by loss of appetite, &c., which not unfrequently imperatively forbid their continued use. Instances of this kind, I have no doubt, have occurred in the practice of almost every medical practitioner whose experience has been at all extensive. Therefore, I think that the glycerate of tar will prove a valuable remedy, and hope that it may merit the approval of the medical profession.

Glycerin seems to be a good solvent of the medicinal properties of tar, and possessing demulcent, alterative and nutrient properties, serves as a valuable adjunct to the latter therapeutically.

I will now present the formula which I have adopted, after repeated trials, as the most desirable for the manufacture of this preparation :

R. Picis Liquidæ (strained),	℥j. troy.
Magnesia Carb. (rubbed to powder on a sieve),	℥ij. “
Alcoholis,	f℥ij.
Glycerina,	f℥iv.
Aquæ, quantum sufficit.	

Mix the alcohol and glycerin with ten fluidounces of water.

Rub the tar in a mortar, first with the carb. magnesia gradually added, until a smooth pulverulent mixture is obtained; then gradually add, in small portions at a time, with thorough trituration continued for fifteen or twenty minutes, six fluidounces of the mixture of alcohol, glycerin and water and strain, with strong expression; return the residue to the mortar, and repeat the trituration as before, with five fluidounces more of the same liquid, and express; again treat the dregs in same manner with the remainder of the menstruum, and after expression reduce the residue by trituration to a uniform condition, and finally pack firmly in a glass funnel prepared for percolation, and pour upon it the expressed liquors, previously mixed, and when the mixture has all passed from the surface, continue the percolation with water until one pint of liquid has been obtained.

It will be observed that the manipulation employed above is similar to that adopted by the writer in the preparation of the syrup of tar, the formula for which will be found in the January number of this Journal. The percolation is well calculated to exhaust the tar of all that is medicinally valuable.

When first prepared, the "Glycerate" is of a beautiful rich reddish-brown color. After a short time it looses, in a measure, its transparency in consequence of a separation of *inert* pitchy matter. But its pristine beauty may be easily restored by filtration, which is accomplished in a few minutes, as it passes the filter very rapidly. This deposit of resinous matter continues for a considerable lapse of time, but does not diminish or impair in the slightest degree the medicinal virtues of the preparation, but simply temporarily mars its beauty.

It possesses in a high degree all the sensible properties of tar. In this they are more strongly marked than in any preparation of tar, excepting the tincture, I have seen.

In conjunction with the fluid extract of wild-cherry bark, acetate, or syr. squills, syrups of sanguinaria, lactucarium, &c., in varied proportions to suit the views of the prescriber, it will form elegant and palatable combinations, which will be found peculiarly adapted to the treatment of chronic coughs, and the various diseases of the pulmonary organs.

Each fluidounce of the glycerate, if the process has been care-

fully managed, will represent about thirty grains of tar, the dose of which is from a dessert to a tablespoonful.

The glycerate may be made, and I think almost equally well, without alcohol, by replacing that liquid with glycerin. When made in this way, the preparation deposits less resinous matter, as glycerin takes up less of that substance, yet the odor and taste of the tar is nearly as strong as when alcohol is employed in its manufacture.

Philadelphia, February, 1869.

ON THE FLUID EXTRACT OF LIQUORICE-ROOT AS AN EXCIPIENT FOR QUINIA.

BY JOSEPH HARROP.

In the November number of the "Journal" (1868), I noticed a communication on syrup of chocolate as a vehicle for quinine, by the use of which it appears the taste of quinine is entirely avoided. There is at least one objection to the use of the preparation referred to, the time and pains necessary to prepare it. This might not be an objection to some apothecaries, but to the majority I think it would be. The writer also mentions its liability to ferment, which would be another objection.

After reading the article referred to, I remembered having on several occasions added as an adjuvant powdered extract of liquorice, as per prescription, to quinine mixtures, but which as far as I could judge, did not much conceal the bitter taste of the medicine. About the same time I had occasion to take some quinine, and on looking around for something to overcome its bitterness, I tried the fluid-extract of liquorice-root, which I thought would at least be nicer than the powdered extract, when I found it to completely conceal the taste.

The inference then may be that the glycyrrhizin, said to be the source of the sweet taste in the root, and described as a transparent yellow gelatinous substance, overcome the bitterness of the quinine, and that the principle is, in part, destroyed or impaired by the process of manufacture in producing the commercial extract.

Might not the fluid-extract or a concentrated tincture be used

to more completely cover the taste of aloes in the tincture, of which Dr. Wood says "liquorice answers the purpose imperfectly?" also in other preparations having an unpleasant taste?

Leavenworth, Kansas, Jan. 21st, 1869.

ON AROMATIC SUGAR.

By WM. L. TURNER.

It occurred to me some time ago that the aromatic powder of the Pharmacopœia was not used to an extent proportionate to its value as an aromatic combination, and that this was mainly to be attributed to the following facts in reference to the preparation.

It is to a very limited extent adapted to the various forms in which medicines are prescribed.

Its well-known tendency to deterioration and the consequent uncertainty of obtaining a reliable article, has probably restricted its use, even in cases where it is adapted.

Impressed with the idea that these objections might to some extent be avoided, I was induced to prepare an aromatic sugar, representing in aromatic combination and strength the officinal powder, or sufficiently so for practical purposes, which from its solubility and the consequent readiness with which it can be incorporated with emulsions, mucilaginous mixtures, &c., is possessed of a more general adaptation, and is I think a more permanent preparation.

It has been prescribed to some extent in my immediate neighborhood, and the opinion of those who have tried it is, that it is decidedly preferable to the aromatic powder.

I prepared it as follows :

Take of aromatic powder, (freshly prepared)	8 oz.
Sugar,	8 oz.
Stronger alcohol, q. s.	

Exhaust the powder by percolation and pour the resulting percolate over the sugar, evaporate spontaneously or at a low heat (with occasional trituration toward the end of the process) until dry.

Phila., Feb., 1869.

ON GLYCERIN AS AN EXCIPIENT FOR PILLS.

BY THOMAS E. JENKINS, M.D.

I have been using glycerin (Price's or Bower's) for a long time as an excipient for pills, and with great success and satisfaction, but alone it is not just the thing for quinine; it makes a mass with four times its weight of sulphate of quinia, which with care gives a *small* handsome and soluble pill; it is hygroscopic however, and requires lycopodium and a tight box or bottle. The pill is as small or smaller than that made with aromatic sulphuric, or tartaric acid, and is *more manageable*. It is "tender," however, and will not suit for sugar coating. This glycerin quinia pill business is original with me, so far as I know. I have made a number of experiments with other bodies and find *as a rule* that it makes a good pill mass (hygroscopicity excepted) with nearly all saline bodies which are to some extent soluble in it. It makes a good pill with sulphate of iron; iodide of potassium; bromide of potassium; muriate of ammonia; sulphate of iron and rhubarb; with tannin, kino, etc.; hypophosphite of quinia; hypophosphate of lime; sulphite of magnesia; citrate of iron and quinia; and many others not now remembered, including many of the pill mixtures of the United States Pharmacopœia.

With iodine and iron by hydrogen in excess it gives, with a little trituration, a *greenish* mass capable of being rolled into pills, with no other addition than glycerin, which may be enclosed in a tight vial with a little finely powdered iron.

IS VALERIAN AN ANTIDOTE FOR STRYCHNIA?

BY J. DABNEY PALMER, M.D.

This question suggested itself to my mind a few days since by the apparent inertness of strychnia when given with valerian. I had occasion to poison four cats. To two of them I gave strychnia on pieces of beef; both died. To the other two I gave it on small tufts of valerian, and without the least effect. The quantity given to each cat was about two grains.

[The writer does not say in what manner the poisoned valerian was administered. If dry, may not the powdered strychnia have fallen off? The experiment is worth repetition to prove or disprove the correctness of Dr. Palmer's inference.—EDITOR.]

CULTURE OF OPIUM IN THE UNITED STATES.

BY THE EDITOR.

There has arisen in several parts of our country a desire to try the culture of the poppy with a view to its narcotic product—opium; want of success in some instances has been due to bad seed. A letter from Mr. W. P. Creecy, of Vicksburg, Miss., says:—"In response to your inquiry 'concerning my success in the experimental culture of the poppy,' I have to state that I totally failed. I procured the best imported seed that the Department of Agriculture, at Washington, afforded. I divided the seed into three parts. One lot was planted in the rich alluvial soil of the river bottoms; this was superintended by one of the best practical planters of this section, but none came up. Lot No. 2 was planted in the higher ground of the hills, with the same result. Lot 3 was carefully planted in garden soil, richly manured, with the same result. I am thus forced to believe that the seed were *worthless*, as the common garden poppy grows luxuriantly here. Could I get some really good seed I would feel sure of success in producing an excellent article of opium, the climate being in my judgment admirably adapted to the culture of the plant."

In the Ledger of February 12th is the following: "It is reported that the cultivation of the poppy plant will be introduced into Louisiana. A French gentleman at Natchitoches, it is stated, has announced his intention of planting several acres of poppies the coming spring, for the purpose of making opium, under the impression that an acre of poppies will yield fifty pounds of opium worth (now) 15 to 20 dollars a pound, and that one man can cultivate three acres."

Now it is very desirable that persons engaging in this business should not be deceived. That poppies can be cultivated almost any where in the United States there can be no doubt; and it may be true that one man can cultivate three acres; but the point of the matter is in the gathering of the juice by wounding the poppy heads. This has to be carefully done with an instrument that will not penetrate the capsule, else the juice is lost; further, it has to remain on the capsule to inspissate or thicken,

and is liable to be exposed to rain, by which it is lost. The period when the capsules are in the proper condition for wounding is limited; hence the tedious labor of gathering the juice must be accomplished promptly, which requires many hands, and corresponding expense. Large quantities of growing poppies were seen by the writer in France, Bavaria, several parts of Germany and Belgium, where they are raised for the oil obtained by expressing their seeds. The Germans especially are noted for perseverance, and for low wages, and it has repeatedly occurred to us, why do these people not make opium, if it is a paying business, when they could do so and have the seeds for expression besides? It has probably been ascertained that the time required for gathering the juice rendered the cost too great at the old prices; possibly the present price may induce a trial. In the Turkish department of the Paris Exhibition there were a great many samples of poppy heads with part of the stalk attached, showing the wounds caused by the opium gatherers, which were apparently healed. These wounds, in all cases noticed, were around the capsule and not longitudinal. The capsules appeared to be of full size.

ON SOAP LINIMENT.

By J. B. MOORE.

There are but few preparations in the Pharmacopœia more in demand in the daily routine of business, or that the pharmacist is more frequently called upon to make, than this Liniment. It is therefore important that the process for its manufacture should be as simple and as easy of execution as possible. But unfortunately the officinal formula, offers a very tedious and troublesome process, requiring several hours for its completion. It directs to "mix the alcohol and water, digest the soap with the mixture, by means of a water-bath, until it is dissolved, &c." To effect the solution of the soap in this way requires that the digestion be continued several hours. This is the most objectionable feature in the process.

Now, I propose in this paper to offer a formula which I have been accustomed to use for the manufacture of this liniment for

a number of years with much satisfaction, having never, in a single instance, been disappointed in producing a perfectly acceptable preparation. It is simply a modification of the "official," in which I substitute alcohol fort. for alcohol 85 per cent. U. S. P., which, with a somewhat different manipulation, entirely obviates the prolonged digestion entailed upon the process by the official formula, and consequently affords a more facile, expeditious and economical method of operating, and at the same time preserves *intact* the integrity of the finished product, the result being in *strict conformity* to the requirements of the Pharmacopœia. The following is the formula which I offer, and which has stood the test of about fifteen year's experience:

R. Saponis, (in shavings or coarse powder), $\bar{\text{z}}$ iv Troy.

Camphoræ $\bar{\text{z}}$ ij. "

Ol. Rosmarini f $\bar{\text{z}}$ ss.

Aquæ Bullientis f $\bar{\text{z}}$ viss.

Alcohol Fortioris f $\bar{\text{z}}$ xxixss.

Pour the boiling water upon the soap, in a pan or other suitable vessel; stir and beat the mixture well with a spoon for about five minutes, or until a soft, comparatively smooth and pul-taceous mass is obtained. To this gradually add the alcohol, with constant stirring, until the soap is dissolved, then filter into a bottle containing the camphor and oil of rosemary.

If, after the alcohol has all been added and the mixture well stirred, there should remain any lumps or undissolved portions of soap, these should be separated by passing the mixture through a sieve or other strainer, rubbed to a smooth paste, dissolved in a portion of the strained liquid, and then the whole mixed together before filtering.

The soap generally employed by pharmacists for the fabrication of this liniment is the broken pieces, cuttings, and waste portions which accumulate in the course of business and which is usually quite dry; when in this condition it can be readily reduced to coarse powder by contusion and trituration, which will greatly facilitate its solution.

In hasty preparation, in order to render the camphor more quickly soluble, it may be first reduced by trituration with a portion of the solution of soap.

In the foregoing formula, instead of using two pints of 85 per ct. alcohol and four fluid-ounces of water, as directed in the officinal formula, I take twenty-nine and a half fluid-ounces of alcohol of 92 per ct. and six and a half fluid-ounces of water. These proportions afford, in the finished product, the proper alcoholic strength required by the U. S. P., with almost mathematical exactness.

The quantity of water rendered available by this plan of operating is sufficient to disintegrate and soften the soap, and render it almost immediately soluble in the alcohol.

I have generally been in the habit of using 95 per ct. alcohol, as it admits of the use of about one fluid-ounce more water than the alcohol fort., but as it is a strength of alcohol not recognized as an officinal standard, I have in the above formula directed the latter, although I presume, in practice, the former will be almost universally employed.

By the above method of operating, if the soap is in proper condition, a gallon of soap liniment can be made and filtered ready to dispense in about an hour. From five to fifteen minutes is all that is necessary for the solution of the soap, if it is properly manipulated, the balance of the time being consumed in the filtration.

This process the most conscientious pharmacist may adopt and feel that he is complying with the *spirit* if not the strict letter of the *standard authority*. A single trial will convince any one of the advantage it possesses over the officinal process.

Philadelphia, February, 1860.

LABARRAQUE'S WINE OF QUININUM.

BY THE EDITOR.

A correspondent desires to be informed, through the columns of this Journal, of an easy method of preparing *Labarraque's Vin de Quinium*.

"Quinium" is a name given by M. Labarraque to the crude quinine or alcoholic extract of cinchona by lime. According to M. Dorvault (*Officine* p. 520, edit. 1858), it is prepared as follows: Take such a mixture of cinchona bark as shall contain

about 2 per cent. of quinia and one of cinchonia, bruise it finely and add to it half its weight of hydrated lime in powder. Treat the mixture with boiling alcohol till exhausted, and distill off the alcohol from the resulting tincture by aid of a water or steam bath to dryness. The residue is *quinium*, which contains 33 per cent. of its weight in cinchona alkaloids. It is therefore very much richer in alkaloids than the best extracts of cinchona, and the preparations made from it are of course easily made more active, and as it is graduated in strength, more uniform.

Wine of quinium is prepared by dissolving $4\frac{1}{2}$ parts of quinium in 1000 parts of white wine, such as sherry and maderia; this is about equal to about 35 grains to the pint. M. Dorvault says the dose is from three to six fluidounces in 24 hours as an antiperiodic in fevers, and from an ounce and a half to three ounces per day as a tonic.

We do not know the precise solubility of quinium, but may hazard the opinion that a stronger solution with a less dose would be preferable when the stimulating effects of the alcohol are not needed.

GLEANINGS FROM AMERICAN JOURNALS.

BY THE EDITOR.

Bite of the Centipede.—Dr. Rounsaville, of Bluffton, Arkansas, (in Nashville Jour. Med. and Surg., Jan. 1868), describes a case where a man, 24 years old, was bitten by a centipede on the arm, the insect having been caught between his arm and a rail he was lifting. The animal had sunk every foot into the skin, causing a double row of black dotted impressions nine lines apart and five inches in length; the arm was greatly swollen, having an erysipelatous blush over half its extent, with deep, dull pain and nausea. The part was cupped and scarified and tincture of chloride of iron applied, with 16 grs. doses of bromide of potassium every half hour until 7 doses were taken. The patient recovered without serious inconvenience about the 6th day after. The author believes that each foot of the animal is charged with poison, but he does not appear to have based this opinion on any microscopic examination of its anatomy.

Sorghum molasses as a remedy in *Diarrhœa* is suggested by the same writer.

Cannabis Indica in *Strychnia* poisoning was administered by Dr. S. A. McWilliams, of Chicago, in teaspoonful doses of the tincture at intervals of 5, 10 and 15 minutes, in a case where five grains of strychnia had been taken with suicidal intent, more than three hours before he saw the patient. The latter was lying on his back, with frequent spasms, frothing at the mouth, pupils dilated, pulse 130. Towards the end camphor was given, and recovery occurred in 48 hours. (Humb. Med. Archiv. Jan. 1869).

Poisoning by Opium sold in mistake for Rhubarb.—Dr. P. J. Farnsworth describes (Phila. Med. and Surg. Reporter, Jan. 30), a case in which a young man stepped into a drug store in Clinton, Iowa, and asked for a dose of *Turkey Rhubarb*. The clerk waiting on him remarked, on giving the powder, that there was enough for two doses. On returning home he took two-thirds of the powder on some jelly with some warm drink and retired at 9 o'clock, P. M., complained of restlessness and headache, and did not sleep for 6 hours, and then went to sleep and soon after had a convulsion and then passed into a stertorous condition, which first caused alarm. Dr. F. was called at 4 A. M., and thinking it an apoplectic attack prescribed bleeding. The remains of the powder being shown was recognized as opium, when an attempt was made to arouse the patient, whose pupils were contracted, and considering it too late for emetics, resorted to fluid extract of belladonna, no atropia being available for hypodermic application. Galvanism was also used, but all were of no avail, the patient succumbing at 8 o'clock A. M., with pupils widely dilated. The paper says nothing of the circumstances of the case as regards the druggist, as to whether he had labelled it or not. The physician attributed the mistake to "criminal heedlessness on the part of the druggist." This it undoubtedly was, as the druggist's remark that it was sufficient for *two* doses proved his intent to give rhubarb rather than opium, as the patient took about 30 grains. The alleged counter-poisonous effect of atropia in opium poisoning deserves a careful investigation to determine in what conditions it is appropriate and safe, else the antidote may usurp the poisonous *role* and prove the greater evil.

Inhalation of Nitrous Oxide with Oxygen.—Dr. H. M. Lilly, in a communication to the *Philadelphia Med. and Surg. Reporter*, recommends inelastic gas bags, rather than elastic ones, for holding this gas, as less wasteful and more agreeable to the patient. He also endorses the recommendation of Prof. Andrews in the *Chicago Med. Examiner*, for Nov., to mix the gas with oxygen before using it in the proportion of half, third, or fifth, and finds the anæsthetic effects are produced without the discoloration of the skin or lips incident to the use of the pure gas. He thinks, however, that a less proportion of oxygen will suffice and proposes one-sixth. In view of this association of gases it would be well that chemists should study the influence of time and moisture on such a mixture, as to whether there is a tendency to oxidation that will result in the presence of even a minimum of a higher oxide of nitrogen.

Carbolic Acid as a Poison. Prof Joseph G. Pinkham, M. D., in a long communication to the *Phila. Med. and Surg. Reporter*, sums up the toxicological points of carbolic acid, as follows: It is a dangerous poison; it is rapidly absorbed into the system; it is rapidly eliminated, chiefly by the kidneys; its local action is caustic, irritant and sedative; its general action is that of a powerful neurotic, causing trembling, convulsions, giddiness, headache, insensibility, a cold clammy surface, a feeble, intermittent, rapid pulse, great prostration, and death. Recovery in non-fatal cases is speedy and complete when there has been no serious local lesion. The post-mortem appearances are neither constant nor distinctive; there is no known chemical or other antidote of value. In treatment the chief reliance must be placed upon measures of evacuation and stimulation. Aside from the actual detection of the poison, the preservation of the body is the most important medico-legal evidence of poisoning with carbolic acid.

The extensive medical and hygienic use of carbolic acid points to the necessity of seeking an antidote, and its importance appeals strongly to the chemist.

Medical Botany in Canada. The Canadian Pharmaceutical Association has issued a circular, dated Sept. 15, 1868, signed by its Secretary, H. J. Rose, offering prizes "for collections of indigenous medical substances of vegetable origin." Three

prizes are offered, \$15, \$10 and \$5 each to be accompanied by a botanical work and a certificate. The competition is limited to members of the society previous to 1869 who have been but three years in the drug trade. The substances, viz : roots, barks, seeds, fruits, plants, etc., to be each wrapped in paper after careful preparation for sale, and be marked with the common and scientific names, the date and locality of collection, and a private mark, which shall also be on the outside of the letter sent with the specimens, containing the address of competitor and his employer's certificate, and sent to the Secretary at Toronto prior to Sept. 1st, 1869. Three judges shall determine the relative merit of the competitors and award the prizes if they receive such award.

This method of competition is calculated to be of great benefit to the students, as in order to name their specimens they must learn the plants yielding them, and by connecting the two in the mind they become more thoroughly acquainted with their history and character. This method is well worthy of adoption by all our colleges of pharmacy.

Sulphate of Atropia in Toothache.—Dr. Samuel R. Percy, of New York, (see New York Med. Journal) has employed atropia in the case of a young woman suffering from toothache, by putting about $\frac{1}{40}$ th of a grain on a slightly moistened pellet of cotton and passing it into the cavity. It always gave instant relief. He applied it many times before she could be persuaded to go to the dentist. It did not cause dilatation of the pupil.

Dr. Percy very properly cautions against the use of this remedy oftener than once in 24 hours, and he might very properly have added that it should be applied only by the physician or dentist. He considers atropia cumulative in its action, and hence the impropriety of its repeated application in a quantity capable of injuriously affecting the patient if it enter the circulation.

Liability of Druggists.—The Medical and Surgical Reporter states that an action was recently brought against Robert Kennedy, an apothecary of Brooklyn, New York, by Thomas Webster, adm'r of Matilda Webster, dec'd, for damages resulting

from the death of plaintiff's wife, as alleged by malpractice on the part of the defendant. Sometime in October, 1867, Mrs. Webster sent her daughter to Mr. Kennedy for "something to make her sleep," as she had lost much rest by an attack of dumb ague. Mr. Kennedy, it is alleged, sent her back with two grains of morphia in one paper, and remarked that if that did not have the desired effect nothing would. The daughter administered the dose and the mother died the next day.

A suit had been brought on two other occasions, the jury in both cases disagreeing. In this instance the defendant did not appear. Medical testimony showed that, although the ordinary dose of morphia was from one-sixth to one-third of a grain, much larger doses were given when the patient was accustomed to it. The damages were laid at \$5000.

In the absence of testimony from the defendant it would not be just to comment on this case further than to educe it as another evidence of the impropriety and risk of counter practice by apothecaries in cases where the physician only should decide, and especially in the absence of the sick.

New uses of Carrageen.—In our last volume we gave a long article, by Hubert Bates, on the carrageen collection and trade in New England, (see page 417, vol. 39, 1868). According to the *American Exchange and Review*, the present high prices of glue and isinglass have caused carrageen to be used as a substitute and added greatly to the demand for it. It is also said to be used in lieu of eggs for clearing coffee. Its most important use is as sizing in the paper, cotton cloth, felt and straw hat industries. The poorer qualities are bought for size. The second quality of moss is sold to the brewers for clarifying their beer when sent out new. Carrageen in this country takes the place of isinglass, which it substitutes without any preparation.—*Druggists' Circular*, Feb. 1869.

Tincture of Pyrethrum Roseum.—In the last number of this Journal we published a notice of the value of this preparation for destroying insects, especially those infecting the person. Prof. Maisch informs us that in two instances where it has been used its application has been followed by a vesicular eruption analogous to that caused by *Rhus toxicodendron*.

ON THE DETECTION OF PHOSPHATE OF LIME IN SUBNITRATE OF BISMUTH.

BY MR. G. G. HORNSBY.

I was not in time for the September issue of the Journal, or I should have sent some remarks on the "Note on a New Adulteration of Subnitrate of Bismuth," by Dr. Redwood. I am glad, however, to find that Messrs. Howard and Sons have pointed out (what I had previously proved by careful experiment) that this test, suggested by Mr. Roussin and supplemented by Dr. Redwood, for the detection of phosphate of lime, was fallacious. This point established, I have somewhat to say upon the modification suggested by Messrs. Howard and Son.

The process they suggest possesses some advantages over that of Mr. Roussin, but cannot, *per se*, be relied upon, as the following results will show. I have operated upon several samples as follows:—

1st. One part of the salt of bismuth, dissolved in nitric acid moderately dilute, two parts citric acid, dissolved in a little water; then add an excess of ammonia, and *boil*. This solution remains perfectly clear until it is boiled, but when it reaches the boiling-point it lets fall a bulky basic precipitate, which remains insoluble until the solution has been boiled for some minutes longer; it then parts with its ammonia, assumes a slightly acid condition, when the precipitate redissolves and remains perfectly bright.

2d. Proceeded as above, adding two grains of phosphate of lime to the bismuth salt previous to solution. The result was similar to the above, with this exception: the precipitate redissolved, but left the solution somewhat opalescent, and, after the lapse of twelve or fourteen hours, gave an abundant, insoluble basic precipitate. Not satisfied with the result of these experiments, I adopted the same method again with two more samples, this time omitting the boiling altogether.

1st. As No. 1 before named, not boiled.

2d. As No. 2; two grains phosphate of lime added; not boiled. The first solution remained perfectly clear, and has done so for many days. The second, after the lapse of five or

ten minutes, gave a bulky, insoluble, basic precipitate. I have also dissolved "metallic bismuth," passing it through the same process; and, whether boiled or otherwise, the results have been the same in each instance as detailed above.

I have carefully examined the precipitates formed, and produced a considerable bead of metallic bismuth before the blow-pipe, whether phosphate of lime has been added or not. The natural conclusion to be arrived at is this, that whilst the modification suggested by Messrs. Howard and Sons may serve as a kind of negative test in the cold, it cannot be relied upon as an absolute test, and especially not when the solution is boiled; although it may serve to show the presence of a phosphate, it is open to the same objection as that suggested by Mr. Roussin.

I have found in all my experiments with this most eccentric of metals that it will not bear boiling in the presence of free ammonia; even the Pharmacopœia liquor, and others which have come under my notice, give this same basic change when boiled with this agent in excess.

There is a question growing out of this well worthy the careful examination of experimenters, viz., does the salt of bismuth undergo a change when boiled in the presence of phosphate of lime and nitric and citric acids, producing an insoluble phosphate of bismuth? Phosphate of bismuth we know is not soluble in acetic acid, but freely so in dilute hydrochloric acid. These precipitates produced by the above-enumerated process correspond to this; but I have had no time to pursue them further, and should be glad to see the subject investigated by more able hands.

This subject is an important one, from the fact that manufacturers and wholesale houses may be exposed to unjust imputations, through hasty experimenters calling the precipitate produced by Mr. Roussin's and Messrs. Howard's test phosphate of lime, and estimating the percentage as such, when none exists in the salt. And the more especially is it important that great care should be exercised, as it appears that this adulteration is one of foreign origin, and the possession of drugs thus adulterated renders the possessor liable to a heavy penalty.

It would not, therefore, be policy for any one to rely upon a

simple test which is in itself fallacious ; and it would be well if we could have some more ready method of detecting this adulteration than the tedious, yet more reliable, one which already exists.

Our daily high-pressure hard work precludes the majority of us from bestowing that attention to these necessary details of examination of the materials we use, which, from the great competition in the markets, renders it necessary that we watch to see if our preparations are carefully prepared, and really what they profess to be.

27, *Upper Rock Gardens, Brighton, Sept. 15th, 1868.*

—*Lond. Pharm. Journ., Dec., 1868.*

KREATININE, AN INDEX OF PUTREFACTION.

BY M. COMMAILLE.

An index of the commencement of putrefaction in many animal substances may possibly be found by the presence of kreatinine. In a note on the presence of this body in putrified whey, M. Commaille, among other interesting things, mentions the above fact. Some filtered whey was placed in a flask, simply covered with paper, and set aside for about a year. The whey fermented and then putrified ; numerous microzymas made their appearance, and the liquid became colored a deep brown. Afterwards, the animal life gave place to a thick mass of spores ; the foetid odor was succeeded by a musty odor only. The liquid thus altered was filtered, evaporated on the water-bath, and treated with alcohol of 95°, which became strongly colored. This alcoholic solution was evaporated and the residue treated with alcohol of 90°, which removed a portion ; the substances obtained from the evaporation of the alcohol of 90° were divided by alcohol of 95°. That portion undissolved treated with water gave abundant crystals containing much mineral matter. Calcined, these crystals leave a white and saline ash ; treated, after solution, with nitrate of silver they yield a voluminous precipitate, which cedes to boiling water a small quantity of long needles, which are perhaps nitrate of kreatinine. The portion removed by alcohol of 95° furnishes, upon evaporation of the liquid,

numerous crystals, which, under the microscope, appear as rectangular plates. These crystals are soluble in water and alcohol, insoluble in ether; they react as follows:—with nitrate of silver, a white magma, soon resolved into silky needles of double nitrate of silver and kreatinine; with syrupy chloride of zinc, small masses, which, examined under the microscope, appear as fine needles in radiating groups; these crystals are double chloride of zinc and kreatinine; with recently precipitated binocide of mercury, at ebullition, metallic mercury. The kreatinine thus obtained is far from pure. Kreatinine ($C_8H_7N_3O_2$) occurs in the putrified whey from the dehydration of the kreatine ($C_8H_9N_3O_4 \cdot 2HO$) already present in the milk. Urine, which has been exposed to the air for some weeks, contains no longer kreatine, but only kreatinine. It would thus seem that the small quantity of kreatinine found in beef tea and recent urine indicates an alteration, inappreciable, one may add, by other means. Kreatine is, in fact, much more often found in fresh animal substances than kreatinine. The reason that kreatine has not been found in milk is probably the great amount of other materials present with it; and only when the lactine has been destroyed by fermentation and putrefaction, it becomes easy to detect in the whey the derivative kreatinine. The detection of a substance hitherto considered excrementitious in milk is worthy of remark. A further analogy between milk, blood, and meat, is also established.—*Paris Corr. Chem. News, London, Jan. 1, 1869.*

DETECTING THE ADULTERATION OF OLIVE AND SWEET ALMOND OILS.

Lipowitz has recommended the use of hypochlorite of lime, bleaching powder, as a means of detecting the adulteration of olive and also of sweet almond oil with the oil of poppy seed (Mohnöl). When eight parts of either olive oil or oil of sweet almonds is rubbed up and shaken with one part of bleaching powder and left at rest, it will be seen that even after some four or five hours a layer of clean and limpid oil separates and floats at the top and surface of the mixture, which layer is, if the oils operated upon are pure, at least half the bulk of the original

mixture; if, however, poppy-seed oil is mixed with either of the two oils just mentioned, and the same experiment then repeated, the mixture gets the appearance of a liniment from which no oil separates. Sweet oil of almonds, adulterated with one-eighth part of poppy-seed oil, behaves as if it were almost pure poppy-seed oil. Büchner and Brande have found Lipowitz's statements correct as regards sweet oil of almonds, but not as regards oil of olives; but they add that the olive oil they operated upon was already old. The action of Lipowitz's reagent is explained by the fact of the rapid oxidation of all so-called drying oils which, on drying, yield solid products before entirely changing, by continuously absorbing oxygen into water and carbonic acid. Linseed oil, hemp-seed oil, poppy-seed oil, oil from walnuts, croton oil, castor oil, are all drying oils. The drying of drying oils is, in fact, a process of slow oxidation of these oils.—*Chem. News*, Jan. 1, 1869, from *N. Br. Arch.*

CHEMICAL ACCURACY.

BY WM. CROOKES, F.R.S.

We cannot see the tendency towards exactness and clearness better than by taking a chemist's view. Air was once the soul of the world, it was the life of man, it was a spirit including intellect, it was a ghost, it was capable of turning into water, which again became earth, and it was in itself nothing material, and had no weight or substance. Now it has fallen into the ranks of ordinary things, although not less wonderful. It has been divided into parts, although unseen. This very spirit of the world has been dissected, and chemists treat it without reverence, measuring it out in tubes or weighing it on balances. Now we can scarcely tell how various its composition. It has two principal parts, but a third was soon added, whilst a fourth, under the name of ozone, has been followed by the scent for many years—we may even say since those ancient days when the smell was observed after violent lightning. Now we have plants and animal diseases almost endless, and strange influences accompanying every wind. These, by degrees, the scientific inquirer is hunting down, and preparing for the world new mu-

seums in nature where we shall see, by the aid of magic eyes, forms of disease lurking around and capable of being successfully attacked instead of insidiously entering and finding no one to struggle against them. The air has been, and will long be a study worthy of the greatest and the most acute, but the progress made is a great triumph, and shows that scientific men in many departments are reasoning, on the whole, rightly and fairly, gaining a victory over the world.

We may say that all organic matter comes from the air, the trees, and the lower animals, and man himself; and when we have viewed this proof which chemistry has made we almost return to the original idea that the air is the life of the world, not by general and vague reasons but by careful analyses. Out of air we may form or see formed by natural means thousands of bodies, each varied in its structure as we can prove, although air itself is invisible; and out of it will come many thousands more—movements of unseen bodies, directed by unseen forces, and observed by unseen minds. It is to this that we have come by accuracy to a world that was as unknown as if it were in Saturn, whereas we are in its midst and the scales of our eyes only want removal to show us the irresistible intelligences at work.

The wide and hasty flights of thought are past in many departments. The workers must walk softly. Our trail is not the broad foot of the elephant on the mud, but the slightly displaced leaf of the forest. With patience the chemist watches the drops from his filter and walks up and down on guard; with patience he observes that one-thousandth of the weight has been lost and that he ought to have lost less; he begins again. We do not wonder at Professor Rose being excited when a courtier, walking about in his laboratory, touched with exquisite forefinger a transparent precipitate of alumina on a filter. Stateliness of manners was forgotten. The chemist seized the offending finger and never ceased to wash it with a jet of water till the earth was all returned to the funnel; nor could he venture to explain, since the jet was driven by his own mouth and swollen cheeks.

The idea of cleanliness in all its accuracy is known only to chemists. When preparing a substance for analysis is there any trouble we avoid if we can aid success? What! in a vile labora-

tory? Yes; no foul air must touch these bodies. Air, that which the most sensitive persons would consider sweet, would be poison. The slightest trace of carbonic acid or moisture, things found in all breezes, would make some analyses imperfect. We can well remember when in that stage of learning when sulphur and hydrogen are so much employed for metals we rushed forward to seek advice, but were driven back from the sanctum by the usually most urbane and pleasant friend. What could that mean? he was preparing a silver salt in order to obtain an important atomic weight. We are obliged to use not only pure air, but sometimes artificial atmospheres, and sometimes the entire absence of atmosphere. As to analysis generally, most chemists have seen in their own day the rise of the methods of Fresenius. It was no easy matter to learn from that of Rose. The information was great, but the system deficient. Now the details and system of Fresenius seem to form an embodiment of logic itself, and if any one learns them he must have learned to reason in such a way that he will gain a great superiority over his former self. Every step carelessly made shows itself in material mistakes; the student must reason closely to keep his solutions correct. He cannot go with mere enthusiasm and boasting long. His own results bring him the greatest reproaches, his experiments silently humble him, and he is laughed at by forces he cannot avenge.

We see the value of accurate work in Berzelius perhaps more than in any man. He built up inorganic chemistry, and if any man follows his work in organic departments he will learn to wonder at its accuracy. He worked as if the eyes of posterity were on all his movements, and he seemed to do his enormous labors by making few blunders. There is no chemist from whom the young can learn so much of the art of working long and honestly. We modify his structure, but it was said by one, himself a great man, "Berzelius is the greatest chemist that is, or that was, or that will be."

We remember sitting with an old philosopher, when he said, "Would you like to see the atoms of Epicurus, out of which the worlds were made—true star-dust?" Who would have said no? he brought a little bottle of meteoric dust—but we must not de-

scribe it; he will do it, or has done it. We thought of these atoms now visible to a microscope but still divided by the chemist in many portions, and long after the finest microscope can aid the finest eye the chemist goes on dividing, and with a certainty which is absolute.

It was our wish to show that science is gradually making its devotees the representatives of care and accuracy. We have scarcely space to carry out the plan fully, but chemists are accustomed to such a variety of occupations that they can readily finish this article for themselves. It is a fine quality that of uttering undeniable truth. Let us not lower that position but rather magnify our office. Let our words suit the facts with an accuracy equal to that with which the facts themselves can be ascertained, and in a world of wavering and changing let us show that there is a class of facts to be found upon which reliance can be placed so far that we may be certain they will never change. In common affairs a mistake may have but a short life, but in the study of nature an imperfect observation may cause infinite trouble to thousands. The increased study of science will promote exact observation and greater love of truth among men, and will produce a race that will either absorb the worthless residuum or drive it hence into the unknown and unseen.—*Ext. from Editorial of Chem. News, Jan. 1, 1869.*

CRIMINAL POISONING BY ATROPIA.

A case is about to occupy the tribunals of Geneva which bids fair to be a *cause célèbre*. Mademoiselle J. stands charged with causing the death of several persons by means of the sulphate of atropia, which she obtained in the form of a collyrium by the pretext of consulting various practitioners for disease of her eyes. Her pupils were habitually dilated, and she wore green spectacles. She had visited various cantons offering her services as a nurse to doctors, or whoever had need of such a person, and carried about with her the names and addresses of some of the most influential persons in Switzerland. She was very assiduous in her attendance upon all those who were consigned to her care; and her conversation, knowledge, and long experience imposed

upon even the most experienced persons. At Geneva, however, after several of her patients dying, suspicion was aroused, and she was carefully watched, especially by Dr. Rapin, one of whose relations was among the number of her victims. At a boarding-house where she gained admission several persons died, and one morning the inmates were startled by finding an unknown hand had conveyed its warning by placarding at the door these ominous words: *Ceux qui entrent ici n'en sortent pas*. The public became alarmed, and suspicions were more and more pointed at J., who had become very dexterous in persuading her victims not to seek for medical advice. At last one of them, a young German governess, to whom she had given some atropia, was brought to the hospital, having all the symptoms of poisoning by atropia, great dilatation of the pupils being especially remarkable. She recovered, and stated that Mademoiselle J., while professing to instruct her in French, gave her from time to time some fluid to drink, saying it was *kirschenwasser*. Mademoiselle J. has been arrested and awaits her trial. Several phials containing atropia were found at her residence, and seven bodies have been exhumed and submitted to medico-legal investigation, with the result of the discovery of atropia and other poisons. (Since the above was written, the prisoner has confessed, and been condemned to penal servitude, notwithstanding the plea of insanity.)—*The Med. News and Library*, Jan. 1869, from the *Med. Times and Gaz.*, Dec. 5, 1868.

A CASE OF POISONING BY THE CYANIDE OF POTASSIUM.

BY A. B. ARNOLD, M.D, of Baltimore, Md.

The symptoms of poisoning by the cyanide of potassium and prussic are said to be identical, but as these cases generally terminate very rapidly, little opportunity has been afforded to watch the course of the symptoms or to note the subjective sensations peculiar to the action of these poisonous agents. The following case, which happened in my own person, is therefore of some interest, since I well remember the manner I was affected when the poison first began to act, and also the agonizing struggle for life, which immediately preceded recovery. Various statements of the accident, which occurred some years ago,

found their way into the daily press, but a full and reliable account of the case I had, for certain reasons, withheld from publishing till now.

I was sent for in the evening by Mr. G. Eckert, of this city, to attend his child, about two years old, for whom I prescribed a mixture containing two scruples of chlorate of potash. Early the next morning I was hastily summoned to see the child again, whom I found already dead on my arrival at the house. The nurse informed me that the child, on the previous evening, could not be induced to swallow any of the medicine which I had prescribed, but that about half an hour ago the child took a teaspoonful of it, which almost instantly caused convulsions and soon after death. While I was examining the corpse, noticing the white froth at the mouth, the very pallid countenance, and coolness of the surface, the nurse suggested that the medicine might have killed the child, and that either myself or the apothecary had made a fatal mistake. At the same time she handed to me the phial containing nearly the whole of a two ounce mixture, which I repeatedly carried to my mouth, in order to determine by the taste of what it might be composed. I was still holding the phial in my hand when I began to feel a slight giddiness of the head and an inclination to yawn, to sigh, and to heave. Soon after I experienced some difficulty in using my lower jaw in the act of speaking. No further doubt remained now in my mind that I had tasted some deadly poison. I hurried to a drug store at the corner of the next street, which happened to be the same one where the medicine had been procured. On my way thither, which took me but a few minutes, all the symptoms I have mentioned increased, and when I reached the apothecary's my gait seemed to me to be unsteady. I called for a strong emetic and sat down on a chair. Mr. Löffler, the druggist, handed to me in a teacup a solution of tartar emetic and ipecac., which I had some difficulty to introduce into my mouth, and I distinctly recollect that I neither felt the usual taste of the drugs nor had any sensation of the act of swallowing. Mrs. Löffler, who was present at the time, told me afterwards that I fell off the chair before I had finished drinking the emetic, that I turned blue in the face, and breathed slowly and heavily. It was about eight o'clock in the morning when I came

to the drug store, and at two o'clock of the same afternoon I gave the first signs of returning consciousness. The medical attendant who first saw me told me that he found me lying on the floor in a deep stupor; a reddish froth covered my mouth and nose; my face looked livid and bloated; the pulse was hardly perceptible; respiration was heavy and labored, and produced the blowing of bubbles at the mouth; urine and feces came away involuntarily. About two pints of blood were taken from my arm without any mitigation of the symptoms. I clearly recollect that, some time before I had fully recovered from the effects of the poison, I struggled desperately for breath, and that the horrible conviction of impending suffocation, though ignorant of its cause, did not leave me for a single moment. About the same time I recognized the presence of my wife and brother, but the violence of the asthmatic symptoms prevented me from speaking to them. This dreadful smothering sensation seemed to me to have continued for a great length of time, though I learned afterwards that this stage lasted hardly thirty minutes. I also remember the effects of the pungent smell of carbonate of ammonia, which was held frequently to my nose, and I shall never forget the sensation of imminent suffocation which it produced. The efforts I made to prevent a repetition of it must have been wild and furious, for I recollect that my arms and legs were held tight by some of the bystanders while the ammonia was again applied. As soon as I felt the first disposition to vomit my consciousness was perfectly restored, and I have the indelible recollection of the anxiety I felt, lest the act of vomiting would smother me to death. The first ineffectual attempts at emesis did in fact increase the asthma. To my greatest joy, or rather surprise, the copious evacuation of the contents of my stomach, consisting of an undigested breakfast, was instantly followed by a complete cessation of all the symptoms. The relief was prompt and permanent. It is hardly to be presumed that the emetic I had taken five hours before caused the vomiting, and, besides, authors state that recovery is usually preceded by emesis.

The circumstance which led to the discovery of the kind of poison I had taken, and which cost the life of the druggist, is somewhat curious. It appears that when Mr. Eckert heard that

I was lying at the point of death in Mr. Löffler's drug store, he came to see me, and brought the medicine with him which had proved fatal to his child. He accused Mr. Löffler of having poisoned the child, who in an excitable manner offered to swallow the contents of the phial, in order, as he said, to show that he made no mistake. Unfortunately he was permitted to drink nearly a tablespoonful of the mixture, and in a few minutes afterwards he fell down dead. The attending physicians examined now the prescription file of the previous day, and found one over my signature, which read : Potass. chlor. \mathfrak{z} j, syr. gum acac. aqua anis, aa \mathfrak{z} j.—M. S.—One teaspoonful every three hours. They next examined the contents of a glass jar which was labelled Potass. Chlorat., which was, however, empty, and the few grains of a dirty, whitish looking salt which they scraped from the bottom of the jar, bore no resemblance to the well-known crystals of the chlorate of potash. It was further discovered that another label was under the one which had P. C. written on it. This was brought to view after the top label had been detached by carefully wetting the paper, when the words Kali Cyanuret became distinctly legible. The whole mystery was subsequently fully explained by Mrs. Löffler, who stated that her husband had bought the drugs at second-hand from a German druggist, and was therefore not aware of the fact that the jar marked Potass. Chlor. had formerly contained the cyanide, some of which still stuck to the bottom of the jar ; and that on the previous evening, when my prescription for chlorate of potassa came in, it required considerable scraping of the jar to make up the full amount of the drug.

It is impossible, under these circumstances, to determine the exact quantity of the cyanide which proved fatal to the child and druggist, but its deadly effect in both these cases was fearfully rapid. In my own case I must evidently have taken considerably more than the highest medicinal dose, which is stated to be the five-sixths of a grain. Mr. Nunnley, who has reported a case similar to my own, in one of the English medical journals, conjectured that the immediate effects of poisonous doses of the cyanide of potassium act on the notary functions. This opinion seems to me to be correct, for my consciousness remained intact for some time after I had felt the stiffness of my lower jaw and

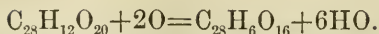
difficulty in moving my lower limbs. It is, however, possible that the disturbance of the sensory functions may set in simultaneously with those of the motory, for the loss of taste of the emetic solution which I drank I experienced but a few minutes after I had swallowed the poison. The violent form of asthma which preceded recovery in my case, and which has been uniformly observed in similar cases, is another symptom which lends weighty support to the opinion that the motor element of the respiratory function is originally affected by the poisonous action of prussic acid and its compounds—and if this be true, it may suggest a solution of the much-vexed question of the pathology of asthma. The temporary paralysis of the motor nerves, whether at their centric origin in the medulla oblongata, or along their distribution to the respiratory apparatus, from any cause whatever, would be sufficient to give rise to all the symptoms characteristic of true asthma. There can hardly be a doubt that the feeling of constriction about the chest, or the gasping for air, which has been witnessed in cases like my own, is but an abatement of the paralytic effects of the poison on the nerve-centres, which supply the respiratory, and perhaps also the circulatory system, with adequate innervation.

[It may not be out of place to here call attention to the important observations of M. W. Preyer, noticed in our preceding number, p. 577, who asserts that the subcutaneous injection of sulphate of atropia, if made pretty quickly after the ingestion of prussic acid, is an *unfailing antidote*, provided a sufficient dose of the acid has not been taken to paralyze the heart.—ED.]
—*Amer. Journ. Med. Sci.*, Jan., 1869.

FORMATION OF ELLAGIC ACID BY MEANS OF GALLIC ACID.

BY M. J. LÖWE.

By heating nearly to the boiling point for several hours in an aqueous solution of two equivalents of gallic acid and one of arsenic acid, a crystalline precipitate is deposited, which is none other than ellagic acid; the best way is to mix the two acids in the proportion indicated above, add water, evaporate to dryness, heat in an air bath to 120°, and extract with alcohol at 90°, which does not dissolve ellagic acid. The reaction is the following—



In commercial tannin there is always gallic acid, and consequently ellagic acid which proceeds from it. A cold extract of oak bark gives by degrees a yellow deposit of ellagic acid, and it is, indeed, this same acid which constitutes that gelatinous covering which is formed over tanned hides.—*Chemical News*, Jan. 22, 1869, from *Journ. de Chim. Prat.*

THE TINNING OF SAUCEPANS.

In France, as in other parts of the Continent, the use of copper saucepans is very far more general than it is in England, and great care is generally taken to keep them in good order. In all well-conducted houses copper vessels are tinned frequently, and cooks are thoroughly impressed with the danger accruing from neglect in this respect. The police regulations require that nothing but pure tin should be used, but that metal is dear, while lead is cheap, and therefore a mixture of the two metals is too often made use of. The mixture works well, but when the lead forms a considerable part of it the vessels become decidedly dangerous. In consequence of information obtained and suspicions entertained, the Minister of War ordered an inquiry to be made into the subject by the directors of the military hospitals. The result of this inquiry has been read before the Academy of Medicine, and brings out the startling revelation that some manufacturers of copper utensils and tinner's mix 25, and in some cases 50, per cent. of lead with the tin, and that, in addition to this, antimony, another dangerous metal, is added. From the facts thus brought to light, M. Gobley, a member of the Academy of Medicine, has drawn up the following list of recommendations:—1. That the metal used to line copper drinking vessels shall not contain more than 1 per cent. of lead. 2. That not more than 5 or 6 per cent. of lead be mixed with the tin used for saucepans or other cooking vessels, that amount offering no serious danger. 3. That every maker shall be required to mark his productions with a special stamp. 4. That the travelling tinmen shall be strictly watched.—*Chem. News*, Dec. 11, 1868, from *Journ. of the Society of Arts*.

PARASITES OF INFECTIOUS DISEASES.

Prof. Hallier, of Jena, read a paper on this subject before the Annual Congress of German Naturalists and Physicians, which met in Dresden, in September last. He said that it was Böhm, who, thirty years ago, first discovered minute organized beings in the intestines of cholera patients. This important observation, however, remained unnoticed for a considerable time. The minute organisms observed by Böhm belonged to the species of Bacteria and Vibrio, which had been known as far back as the last century, but had only been accurately examined by Ehrenberg, and which were by some zoologists classed amongst the Infusoria, while others placed them with the Algæ and Fungi. Quite recently a number of observers had commenced to investigate their origin and their conditions of life, because the fact of their being found in fermenting and putrid substances, as well as in pathological liquids, had invested them with a considerable degree of interest. It had been too much the custom in former times, as soon as any such formations were observed, to make immediately a number of species and genera of them, without investigating at all the origin of these minute organisms. It had now been shown that they were nothing but lower grades of development of higher classes of fungi. In sixteen infectious diseases the presence of a peculiar and characteristic fungus had now been demonstrated—viz., in cholera, typhoid fever, typhus, measles, dysentery, and certain diseases of the domesticated animals. Whether the parasite was the actual cause of the pathological process could at present not be made out with any degree of certainty; but the fact that certain peculiar forms of parasites were invariably present in certain diseases was no doubt most significant. In the disease of the silkworm it had been irrefutably proved that, in spite of numerous conditions favoring the tendency to the development of the disease, the parasite itself was the sole and exclusive cause of it, and that not only the hereditary transmission, but also the epidemic character of the complaint, was entirely dependent upon the presence of the parasite.—*The Med. News and Library*, Jan. 1869, from *Med. Times and Gaz.*, Oct. 31, 1868.

OCCLUSION OF HYDROGEN BY METALS.

The master of the mint has applied this term to the absorption of gases by what he terms colloid metals.

A new method of charging the metals with hydrogen at low temperatures has lately been discovered by him.

When a plate of zinc is placed in diluted sulphuric acid hydrogen gas is freely evolved from the surface of the metal; but no hydrogen is occluded and retained. A negative result was, indeed, to be expected from the crystalline structure of zinc. But a thin plate of palladium in the same acid, and brought into contact with the zinc, soon becomes largely charged with the hydrogen, which is transferred to its surface. The charge taken up in an hour by a palladium plate amounted to 173 times its volume.

Although the hydrogen enters the palladium, and no doubt pervades the whole mass of the metal, it exhibits no disposition to leave that substance even in a vacuum at the temperature of its absorption. Occluded hydrogen is therefore no longer a gas, whatever may be thought of its physical condition. When palladium charged with hydrogen is left exposed to the atmosphere, the metal is apt to become suddenly hot, and to lose its gas entirely by spontaneous oxidation.

The condition of hydrogen, as occluded by a colloid metal, may be studied with most advantage in its union with palladium, where the proportion of gas held is considerable. The largest absorption of hydrogen observed was in the case of palladium thrown down upon a thin platinum wire by electric deposition. Such a specimen of metal occluded 982 times its volume of hydrogen, or by weight—

Palladium,	99.277
Hydrogen,	.723

100.

or an approximation to the compound Pd H.

Professor Graham thinks that the passage of hydrogen through metals is always preceded by the condensation, or occlusion of the gas. The "solution affinity" of metals appears to be nearly confined to hydrogen and carbonic oxide; metals are not sensibly penetrated by other gases than these.—*The Med. News and Library*, Jan. 1869, from *Med. Press and Circular*, Sept. 2, 1868.

ON THE MILKY JUICE OF LACTUCA ELONGATA, MUHL-
ENBERG.

BY JOHN M. MAISCH.

Lactuca elongata, Muhl., is now generally described as a variety of *L. Canadensis*, Lin., under which name all the different forms of *Lactuca* are comprised which are indigenous to Canada and the Northern and Middle States of the Union; but this species is likewise met with, though less frequently, in the Southern States. It is a coarse plant, growing in hedges and thickets, in somewhat damp situations, and in favorable places its annual stem often exceeds eight feet in height. The inflorescence usually forms long and, at first, rather dense panicles, but it is also met with in rather loose, compound racemes. The foliage is extremely variable, and in the same situation specimens may frequently be seen with the leaves varying from runcinate pinnatifid to entire, and with the base rounded to sagittate and even amplexicaul. Its flowers begin to appear in July and the fruit to ripen in the month of August; but flowers and fruits may usually be found in the same plant till late in September and even in October.

Like other species of the same genus, this plant is lactescent in all its parts above ground, and the greatest number of the vessels carrying the milky juice are found immediately beneath the thin bark, so that a very slight incision will at once produce a milk-white exudation. Our species therefore resembles in these respects the two species from which, in Europe, lactucarium is produced, namely, *Lactuca virosa* and *sativa*, Lin., and it was reasonable to suppose that they all might, to a certain extent, resemble each other in their medical properties. In regard to this point we find the following passage in the U. S. Dispensatory, 12th ed., page 503:

“It was supposed that our native *L. elongata*, or *wild lettuce*, might have similar virtues; and Dr. Bigelow was informed by physicians who had employed it, that it acts as an anodyne, and promotes the secretion from the skin and the kidneys. But according to M. Aubergier, who experimented with different species of *Lactuca*, in order to ascertain from which of them lac-

tucarium might be most advantageously obtained, the milky juice of this plant is of a flat and sweetish taste, without bitterness, contains much mannite, but no bitter principle, and is destitute of narcotic properties. (Ann de Thérap., 1843, p. 18.) The probability is that it is nearly or quite inert. Therefore, though formerly holding a place in our national Pharmacopœia, it has been discarded."

The subject has interested me for some years, since I had often observed, when out on botanical excursions, that the leaves of the different varieties of our *Lactuca* possess a strongly and lastingly bitter taste.

After the last annual meeting, during the fine days of September, 1867, I commenced the collection of the milky juice from vigorous plants growing in a damp thicket. Most of the plants had attained the height of six to eight feet, with the leaves on the upper half of the stem green and juicy, and bearing flowers and ripe fruits. Oblique incisions were made on various places of the stem. The exuding juice, in a few minutes, lost its fluidity and became gelatinous; though still soft, it possessed sufficient firmness and tenacity to be scraped off with the blade of a knife. To increase the quantity, the leaves were pulled off at the stem, and thus a portion of the bark was usually removed. The wound almost instantly became covered with the juice, which, however, likewise soon ceased to flow in consequence of gelatinizing; when this soft mass was now removed the juice did not again commence to flow, or to the utmost only a minute quantity was obtained in addition.

In consequence of this rapid congelation, I was unable to unite the different tears so as to form a uniform mass similar to the European lactucarium. On drying, at ordinary temperature, these tears shrunk considerably and very irregularly, without, however, coalescing into a uniform mass. The recent milky juice collected, as stated before, in a gelatinous condition yielded 22.13, 24 and 32.23 per cent. dry residue.

The lactucarium thus obtained is in irregular pieces, deeply corrugate and with the ridges rather acute; it has a grey brownish color, persistently bitter taste and a heavy, nauseous, narcotic odor, milder than and distinct from, but at the same

time reminding of the odor of commercial lactucarium. It is rather tenacious and cannot be rubbed into powder like German and English lactucarium. In preparing a syrup from it, it was for this reason exhausted, instead of by displacement, by repeated digestion in dilute alcohol; otherwise the directions of the Pharmacopœia were followed. The syrup (3i to Oi) possessed the bitter taste of the officinal syrup, but its odor was somewhat different and its color rather darker.

240 grains of this lactucarium, exhausted by dilute alcohol, left a residue weighing 151 grains; the soluble matter therefore amounted to 89 grains or 37.5 per cent. This result is intermediate between the amount of "extract" obtained by Messrs. Parrish and Bakes from German and English lactucarium; their sample of the former yielding with dilute alcohol 36, and of the latter 44 per cent. of extract. I am inclined to doubt the practicability of depending upon such a test for judging of the quality of lactucarium, which, like opium, does not represent the sap proper of the plant, but the contents of certain vessels, frequently at certain periods only of the life of the plants. The amount of soluble matter in pure opium is mostly within certain limits, but it has no relation whatever to the amount of morphia or other constituents; and this is undoubtedly true also of lactucarium, the relative proportion of the constituents varying from different causes, as appears to be indicated by the researches of Ludwig, Kromayer and others.

The syrup prepared from my American lactucarium did not possess the same stability during our hot season, as officinal syrup prepared from German lactucarium. The former had a tendency to ferment, so that it was found necessary to add a small amount of Hoffmann's anodyne; a sample, however, which was allowed to ferment, possessed afterwards the original bitterness unimpaired.

A portion of the syrup from American lactucarium was placed in the hands of Dr. J. M. Da Costa, of this city, who was kind enough to try it in his private practice, and informed me that it had been used with decided benefit by several ladies requiring sedatives; on account of the crowded condition of the Pennsylvania Hospital, it was not used in that institution.

Dr. August Muller, resident physician of the German Hospital of Philadelphia, kindly consented to try this preparation on some patients with whom opiates did not agree, but who required sedatives. After satisfying himself of the sedative properties of the American lactucarium in question, Dr. Muller compared it with the German lactucarium, using both in the form of syrup, prepared by myself by the officinal process, merely substituting, for the former, percolation by digestion with dilute alcohol, for reasons previously stated. His conclusion was, that there is no difference whatever in the medicinal activity between the two.

These experiments, made by two physicians entirely unbiassed by the investigation of the other, it seems to me, prove conclusively that the milky juice of *Lactuca elongata* possesses the same virtues in the same degree as that of *L. virosa*.

During the present summer I have tried repeatedly to obtain this American lactucarium of the same appearance as the European article, but being otherwise considerably occupied, I was unable to arrive at a satisfactory result. I feel convinced, however, that the collection of lactucarium from our wild growing lettuce cannot be profitably carried on, and that to compete with Europe in price, cultivation on an extensive scale would have to be resorted to.

But it is not improbable that from the recent or dry herb a pharmaceutical preparation may be obtained, which, though not lactucarium, might answer all practical purposes. I have commenced to turn my attention in this direction, but in consequence of limited time, have only been able to make one experiment, with the following result:

A number of vigorous plants were collected; while fresh they were cut up, bruised and subjected to pressure in a one-screw press; the residue was moistened with water and again expressed; the liquid was heated to boiling and strained. On tasting it now for the first time it was found to have a sweetish taste, entirely destitute of bitterness. If Aubergier examined the juice of *L. elongata*, prepared in the same way, this experiment agrees entirely with his result; but the *press cake* possessed the persistent bitterness of lactucarium.

It is probable that the milky juice of this species, on assuming so readily a tenacious gelatinous form, envelopes the bitter principles and prevents them from being removed with the sap by pressure. This theory would indicate a process for a reliable pharmaceutical preparation, on the merits of which, however, only actual experiments can decide.

Philadelphia, September, 1868.

—*Proc. Amer. Pharm. Assoc.* 1868.

ON THE SO-CALLED OIL OF STILLINGIA.

BY W. SAUNDERS, LONDON, ONT.

Being called on lately to prepare some of this remedy I referred to the American Dispensatory, edited by Dr. King, for information on the subject. After reading the details of the process I met with remarks to the following purport: That the recent root yielded a larger proportion of oil than the dried, but that the article made from the dried root contained the "real active principle" but little impaired. In the next paragraph the author says that "*the dried root is inert or nearly so,*" hence its powder is of no utility. Not knowing how to reconcile these statements, how a preparation containing so much of the "real active principle" could be made from an inert or nearly inert root, I proceeded to test the value of the dried root by experiment.

I had in my possession some stillingia, which, after being dried and crushed, had been left accidentally exposed in an open barrel to the full action of light and air for nearly a year. Of this, five pounds were taken and ground in a Swift's drug mill as fine as possible without sifting. It was then moistened with alcohol, packed in a percolator and allowed to stand twenty-four hours, when fresh spirit was gradually added until nine pints of tincture were obtained, when the root was sufficiently exhausted. Water was added to displace the alcohol remaining in the root and the whole resulting liquid placed in a still, heated by a water bath to recover the spirit. The yield of oil was six and a quarter ounces, to which, on account of its extreme thickness, I was obliged to add one ounce of alcohol; with this addition it was very much denser than the commercial article.

On comparison I found the oil thus prepared *much* superior to any I had purchased, and my supplies have been obtained from one of the most reliable houses in Cincinnati, where, according to Dr. King, the very best articles of this class are to be had. My preparation had the odor, taste and peculiar acidity of the root in a very marked degree; a very small quantity being sufficient to leave a burning impression on the palate for hours after tasting it; whereas the Cincinnati oil, which is supposed to be made from the fresh root, is in all these respects very inferior. I regret I was unable to procure any of the recent root, as I should like to have thoroughly tested the point as to the relative quantity as well as quality obtainable from it as compared with the dry root.

Striving to arrive at some conclusion as to the comparative merit of the preparation I had been buying, I took two fluid-drachms and exposed it in a shallow pan to the action of the air for six hours. At the end of that time I was surprised to find that it had lost more than five-sixths of its bulk by spontaneous evaporation, the product having the consistence of a soft, solid extract and weighing nineteen grains. As sent into the market this oil has a smell of ether, intended, I suppose, to meet the prejudices of the profession who favor the ethereal over the alcoholic preparation. I observed that the ethereal odor disappeared in a short time upon exposure to the air, and that the nineteen grains of resulting extract has but little taste or acidity. The following formula would be about correct for the production of this precious article: Take of solid alcoholic extract of stillingia (quality a matter of little consequence) 76 grains; alcohol 6 or 7 drachms; ether sufficient to make one ounce. For this compound you are charged from 80 cents to \$1.00 per oz.

I fear that there is more mixing and adulteration carried on in the manufacture of these eclectic remedies than in any other department of pharmaceutical labor, for I have rarely, if ever, made a preparation according to any of the published formulas which did not prove very much superior in quality to any similar article I could buy from the dealers.

From the material I have had to work on I can come to no conclusion as to the relative value of the oil of stillingia made

from the recent and dried root. My opinion is that the preparation from the dried root contains all or nearly all the active matter of the drug, and that there is no necessity for recommending the fresh root to be used in this case. All such instructions should, I believe, be avoided where possible, since their tendency is to confine the manufacture of the article chiefly to the localities where the root grows most abundant—an arrangement for many reasons not desirable.

Samples are herewith submitted. No. 1, is the oil of my own preparation. No. 2, that purchased in Cincinnati. No. 3, contains the product remaining after the exposure of the Cincinnati oil to the action of the air.—*Proc. Am. Phar. Assoc.* 1868.

LIQUOR BISMUTHI.

BY GEORGE F. H. MARKOE.

The writer has been called upon to prepare this solution quite frequently, and in considerable quantities, and after a careful trial of all the published formulas for its manufacture has found some objection to all of them. The writer cheerfully acknowledges his indebtedness to Mr. N. Gray Bartlett, to whom we owe the first good working formula given in the *Am. Jour. Pharm.*, Jan., 1865. Mr. Albert E. Ebert, in the same journal, Jan., 1866, gives an improvement on Mr. Bartlett's process by which he avoids the use of crystallized citrate of potassa, and forms the citrate of bismuth by adding citric acid to the nitrate of bismuth and then adding hydrate of potassa, by which means citrate of bismuth is precipitated and nitrate of potassa is obtained in solution, and is got rid of by washing the bismuth salt on a filter. Ebert's process is a good one, indeed the best that has been published, and the only objection the writer has to it is the use of caustic potassa to neutralize the nitric acid. The idea of adding the citric acid to the solution of nitrate of bismuth, must in justice be credited to Mr. Thos. P. Blunt, who first suggested it in the *Lond. Pharm. Journ.*, May, 1865.

The objections to caustic potassa are, that great care must be used to avoid an excess, from the fact that citrate of bismuth is

freely soluble in potassa, and thus involves a loss of bismuth if any excess happens to be used; caustic potassa is a very troublesome chemical to keep in good condition, being very prone to attract both moisture and carbonic acid from the atmosphere, by which means it becomes in a great degree unfitted for use. It is a difficult matter to get caustic potassa free from carbonate, and still more difficult to keep it so, even if free from this impurity when the bottle is first opened. Another objection is that caustic potassa is expensive.

The following modified process offers a substitute for the caustic potassa that gives excellent results. This substitute is well crystallized carbonate of soda, a salt that can at all times be obtained of good quality at a very low price. Citrate of bismuth is less soluble in carbonate of soda than in caustic potassa, hence a gain is made by using the former.

The process is the following :

Take of subcarbonate of bismuth, one troyounce.

Citric acid (in powder), 420 grains.

Nitric acid (sp. gr. 1.42), one and a half troyounces.

Crystallized carbonate of soda, 1150 grs.

Distilled water.

Alcohol, each a sufficient quantity.

Dissolve by gradual addition the subcarbonate of bismuth in the nitric acid, and when the solution is completed dilute it with a fluidounce of distilled water, add the citric acid, stir until it is dissolved. Dissolve the carbonate of soda in ten fluidounces of distilled water and gradually add the soda solution to the bismuth solution, constantly stirring the mixture. After standing for six or eight hours, transfer the mixture to a moistened paper filter, and wash to remove nitrate of soda. Transfer the magma to a mortar or evaporating dish and carefully add water of ammonia until the citrate of bismuth is dissolved. Dilute the solution with an equal volume of distilled water and treat half a fluidounce (14.7 cubic centimetres) with an excess of sulphide of ammonium, or, better still, "*sulphide of sodium*," (as suggested by the writer in a paper presented to this Association, and published in the Proceedings for 1866, 252); collect and wash the sulphide of bismuth on a tared filter, (which has

been exposed to the heat of a water bath, previous to being tared), and heat on a water bath until thoroughly dry; allow the filter and contents to cool under a bell glass over sulphuric acid, and carefully weigh. Multiply the weight of the sulphide of bismuth by the fraction $\cdot 908$ to find its equivalent in teroxide of bismuth. Apply the same ratio to the remainder of the bismuth solution, and dilute it to such a degree that each fluidrachm shall contain one grain of teroxide of bismuth, seven-eighths of which measure must be made with distilled water, and the remainder with alcohol. The average product of liquor bismuthi obtained in several trials was 51 fluidounces, being about two per cent. better results than those obtained by Mr. Ebert's process.

Boston, Mass.

—*Proc. Am. Phar. Assoc.* 1868.

CARBOLIC ACID PLASTER.

BY WILLIAM MARTINDALE.

Professor Lister, of the Glasgow Infirmary, having been led by the experiments of M. Pasteur, proving the germ theory of fermentation and putrefaction, and the action that carbolic acid has of destroying the vitality of these germs, has on these founded what is called "the antiseptic system of treatment in surgery," a series of papers on which he has published in the "British Medical Journal." The principle on which he proceeds is, that after the operation, air shall, as much as possible, be excluded from the wound, and that the dressings applied shall yield a constant supply of carbolic acid in the state of vapor, so that any "germs of organisms" which might obtain access to the part would become inert, their vitality being destroyed. By this means no sloughing takes place, putrefaction is entirely arrested, and the formation of unhealthy *pus*, which in the ordinary treatment causes such a drain upon the patient, is avoided. It is, in fact, "healing by the first intent."

Among the dressings employed, one of the first he used was a carbolic acid putty, made by mixing boiled linseed oil and whiting, with the addition of one part of carbolic acid to four of the oil. But this he found a somewhat clumsy and inconvenient

preparation. He next tried a carbolic acid plaster, made by mixing *emplastrum plumbi* with one-fourth of beeswax to give it sufficient consistence, and carbolic acid in the proportion of one-tenth of the whole. This is spread on calico, in a layer of about one-twentieth of an inch. It is, however, inconveniently soft, and cannot be kept spread in stock. He says, "I have since found that by increasing the proportion of litharge, the lead-soap may be made to any degree of firmness that may be desired, provided that water be not used in the manufacture. When the litharge and olive-oil are in the proportions directed by the Pharmacopœia, a certain quantity of water must be added to promote the combination of the fatty acids with the oxide of lead, and even then the process is a very tedious one. But it is an interesting fact, chemically, that if the litharge is used in about four times the Pharmacopœial proportion, although no water be employed, the combination proceeds under a brisk heat with great rapidity. It is upon this fact the following method of manufacture is based:—

"Take of

Olive-oil 12 parts (by measure).

Litharge (finely ground), 12 parts (by weight).

Beeswax, 3 parts (by weight).

Crystallized carbolic acid, $2\frac{1}{2}$ parts (by weight).

Heat half the olive-oil over a slow fire, then add the litharge gradually, stirring constantly till the mass becomes thick or a little stiff; then add the other half of the oil, stirring as before, till it becomes again thick. Then add the wax gradually, till the liquid again thickens. Remove from the fire, and add the acid, stirring briskly till thoroughly mixed. Cover up close and set aside, to allow all the residual litharge to settle; then pour off the fluid, and spread upon calico to the proper thickness. The plaster made in this way can be spread by machine, and kept rolled in stock; and, if in a well-fitting tin canister, will retain its virtues for any length of time."

But for almost all purposes the antiseptic lead plaster is superseded by his lac plaster, which is made in this manner:—

"Take of Shellac, 3 parts.

Crystallized carbolic acid, 1 part.

Heat the lac with about one-third of the carbolic acid over a slow fire till the lac is completely melted; then remove from the fire and add the remainder of the acid, and stir briskly till the ingredients are thoroughly mixed. / Strain through muslin, and pour into the machine for spreading plaster; and, when the liquid has thickened by cooling to a degree ascertained by experience, spread to the thickness of about one-fiftieth of an inch. Afterwards, brush over the surface of the plaster lightly with a solution of gutta percha in about 30 parts of bisulphide of carbon. When the sulphide has all evaporated, the plaster may be piled in suitable lengths in a tin box, without adhering, or rolled up and kept in a canister." The coating of gutta percha, through which the acid permeates freely, is given to prevent it adhering to the skin, as "it is desirable that such a dressing should adhere very slightly, if at all. It has this great advantage over the antiseptic lead plaster, that it cannot be softened either by a watery or an oily fluid." If made to contain much less than 25 per cent. of the acid, it is brittle, but this may be avoided by the addition of spirits of wine in an equivalent quantity, as this sample contains $12\frac{1}{2}$ per cent. of acid and the same of spirits.

These plasters are generally kept applied to the part by means of ordinary adhesive plaster strapped around the edges of the piece employed. But to avoid any chance of germs getting access to the wound, to the adhesive plaster before spreading, he directs 1 per cent. of carbolic acid to be added.

Many other applications are used in this system of treatment, but these plasters being interesting pharmaceutical preparations, I have thought worthy of bringing under your notice this evening.

The samples exhibited were prepared in the Hospital Dispensary.

University College Hospital, Dec. 2, 1868.

In reply to an inquiry, Mr. Martindale said there was but little loss of the carbolic acid by vaporization in making the plaster. The plaster might be kept for months without losing its pliable condition, or suffering any material deterioration in strength or quality.—*Lond. Pharm. Journ., Jan., 1869.*

OZONIC ETHER.

The substance called ozonic ether, and which is now creating so much interest in the profession, is peroxide of hydrogen in ether. The mixture thus formed was first made by myself; I was testing the action of the peroxide of hydrogen on various substances, organic and inorganic, and having one day added a strong solution of the peroxide to some ether, I was surprised to find that a portion of the peroxide seemed to pass to the ether, the ether, when decanted off, having a very strong taste of peroxide, and yielding oxygen freely when treated with oxide of manganese. On being kept, the ether was discovered to undergo further change, the oxygen becoming more stable and fixed. The addition of a little alcohol to the ether facilitates the absorption of the peroxide. The combination of the oxygen with the ether and some water, although it is very slight, is persistent, for the mixture has been sent to Australia without deterioration. The compound is, without doubt, a useful agent. I think I may claim it as an addition to our list of remedies likely to hold its place.

I used it in the first instance for diffusion in the air of the sick-room, dispersing it in the form of spray. It is quick in action, and effective for purifying the air; it does not charge the air with moisture, and it does not irritate the breathing organs. The disadvantage of it is that it cannot be safely used near a light or fire. It should be sprayed through a glass tube. *Lond. Pharm. Journ*, Jan. 1869, from Dr. Richardson, in '*Medical Times and Gazette*.'

NOTE ON CONFECTION OF SENNA.

By GEORGE F. H. MARKOE.

The writer has been much annoyed by the failure of the present officinal formula to give a satisfactory product in respect to consistence and keeping qualities.

The following modified process is offered as affording a remedy for these objections, giving a confection of better consistence and one that is not liable to spoil by fermentation.

Take of Senna in fine powder, 8 troyounces.

Coriander “ “ 4 “

Purging cassia, bruised, 16 “

Tamarind, 10 “

Prune, deprived of seed, 7 “

Fig, 12 “

Sugar, 50 “

Water a sufficient quantity.

Digest the purging cassia and tamarind with two pints of water, and separate the pulp by means of a coarse sieve. Digest the residue with a pint of water and separate the pulp and add to the first portion; in this pulp digest the prune and fig, previously chopped or cut in fine pieces, (a sausage machine serves an excellent purpose), and then pass the pulp through a coarse sieve and then through a fine one; in this pulp dissolve the sugar by the heat of a water bath and then add the senna and coriander, and thoroughly mix the whole, and evaporate if necessary by a water bath until the finished product weighs ninety-six troyounces.

It will be seen that no change is made in the medicinal activity of the preparation, the quantity of sugar being increased and the quantity of water decreased. The writer in following the officinal formula on the large scale, found that the preparation would keep very well through the winter, but would ferment in hot weather.

These suggestions are offered as a slight contribution to the revision of the Pharmacopœia, in 1870. A somewhat careful examination of the market, leads the writer to conclude that very much of the confection of senna offered for sale is not made in any degree in conformation with the officinal formula.

Boston, Mass.

—*Proc. Am. Phar. Assoc.* 1868.

ON EXTRACT OF MEAT.

BY FRANK J. TOURTELLOT.

In consequence of the many controversies that have recently taken place between certain European chemists, all, apparently, more or less directly interested in the successful manufacture

and introduction of the different "extracts of meat" now offered for sale in Europe, we have thought that the formula of a preparation of a similar nature, prepared by us, and for the last seven years extensively used in this country by the United States medical department and in private practice, might prove of some slight interest to the members of this Association. We therefore beg leave to submit our process of its manufacture, together with a specimen of our product, as also a sample of extract of meat prepared in accordance with Liebig's formula.

After numerous and repeated experiments, and with the results kindly furnished us by several prominent physicians, we have been led to believe that an "extract of flesh" containing the *albumen* of the meat, would prove more desirable and acceptable than one deprived of that highly essential element, and with that view have based our process upon the simple principle of percolation, as applied to the preparation of medicinal fluid extracts.

10,000 lbs. (this being the quantity usually used at one operation) of fresh beef, deprived of bone, fat and sinew, finely chopped, are macerated with cold water for about two hours. Steam is then introduced into the vats in which it is contained until the temperature of the mass indicates 120° Fahr; care being taken to stir the meat frequently. The resulting liquid is then drawn off, strained and set aside. To the residue, water is again added, heat applied to point of ebullition, and so continued for some hours; the resulting liquor is then obtained by gentle pressure, and is immediately transferred to the vacuum pan which receives the *first drawing*, when the preceding is reduced to one-fourth its original bulk. The evaporation is then continued until one pound of the extract in question represents twenty pounds of pure meat, when it is poured in china jars, then covered with waxed paper, and recently, as tending towards its preservation, we coat the paper with tincture of tolu. It will be observed in the foregoing that the object in drawing off the first maceration at a low temperature is to obtain the albumen in almost an unaltered condition, and to *retain it*, by adding it to the result of the second operation, *only* when the latter shall have attained the necessary consistence to preserve it.

The sample of "Liebig's extract" made by us is similar in *color* and *taste* to the South American preparation obtained from Messrs. Van Abbot & Co., London. Recently a sample of our product was subjected to analysis by Dr. F. Mahla, and found to contain too great proportion of water, as also a small quantity of coagulated albumen, that had passed through the strainer. These defects having been remedied, we believe the specimen now before the Convention is similar in composition with that sold in Europe. We cannot understand why so exorbitant a figure should be asked in Europe for the different "Liebig's extracts" in their market. It certainly can be sold at one-half the price now asked for it, and still afford the manufacturer a handsome profit.

The sample of extract of mutton, also submitted, represents forty times its weight of clear meat and is made by *our* process.

The meat biscuits represent four pounds of fresh beef to each pound of biscuit.

Chicago, Ill.

—*Proc. Am. Phar. Assoc.* 1868.

ON THE MORPHIA STRENGTH OF COMMERCIAL OPIUM.

BY P. W. BEDFORD.

QUERY 18.—What is the morphia strength of commercial powdered opium (a number of samples); and what is the most ready means of determining it?

In accepting this query the writer continues a subject on which he presented a paper to this Association some eight years ago.

During the past year he has examined eight specimens of powdered opium, purchased from wholesale houses in our city.

The results have been as follows:

Sample No. 1 contained 9.40 per cent. morphia.

"	"	2	"	9.01	"	"
"	"	3	"	6.33	"	"
"	"	4	"	8.10	"	"
"	"	5	"	7.05	"	"
"	"	6	"	6.75	"	"
"	"	7	"	6.00	"	"
"	"	8	"	6.25	"	"

The quantities operated upon were ten and twenty grammes, and two or three such portions were taken of each sample of opium. The process used was that officinal in the U. S. P.

Recently in conversation with Prof. F. F. Mayer, he stated that the process did not yield accurate results, and suggested a process which he has used in such analysis for some time past. Since that conversation I have not been sufficiently at leisure to take up the subject, and at my request Prof. Mayer examined two specimens which I procured for him from two of our best wholesale houses.

No. 1 contained 13·60 per cent. morphia.

“ 2 “ 9·04 “ “

To the second portion of the query, “what is the most ready means of determining it?” I am not now prepared to give a reply satisfactory to myself. The doubts thrown on my mind as to the perfect reliability of the process of the U. S. P. recently, by conversations with those more familiar with the subject, and the limited time at my disposal, have decided me to leave this portion of the query for further investigation, and another year I will continue the subject.—*Proc. Am. Pharm. Assoc.*, 1868.

LIQUOR OPII SEDATIVUS.

By T. B. GROVES, F.C.S.

The valuable paper of Messrs. Deane and Brady, “Microscopic Research in relation to Pharmacy,” read at the Pharmaceutical Conference Meeting at Bath, probably set many experimenting in the same direction; amongst them, myself.

On returning from Bath, I tried my hand on liq. opii sed., but the results were not, I thought, worthy of publication. An additional fact or two having recently come under notice, I now offer a short *résumé* of experiments made during the years 1864–65.

Two fluidounces of laudanum, mixed with four ounces of water, were evaporated to an ounce and a half, and set aside for a day.

During the evaporation, and subsequently, it deposited a considerable amount of quasi-resinous matter.

The filtered liquid, additioned with sp. vin. rect. $\frac{3}{4}$ ss, formed liq. opii sed. No. 1.

The resinoid precipitate, dissolved in sp. vin. rect. and acidulated with hydrochloric acid, was mixed with water, then heated to expel sp. vin. rect., and, when cold, filtered. The filtrate, containing all the principles soluble in acidulated water, reacted as follows:—Perchloride of iron caused an intense red coloration, indicative of meconic acid; ammonia, a permanent precipitate completely soluble in ether.

The ethereal solution, spontaneously evaporated, left a pale amorphous residue, that after treatment with sp. vin. rect., etc., gave an abundant crop of tufty and stellar crystals, with some polarizers of oblong figure. It seems clear, therefore, that proof spirit dissolves more meconic acid, narcotina, and narceia than does a similar bulk of pure water.

Liquor No. 1, evaporated on a glass slip side by side with Battley's, gave a microscopic figure very different from, and far inferior to it.

Both liquors had an acid reaction with litmus paper. Two drachms of each of them and of laudanum were separately evaporated to dryness, and the residues calcined under the same circumstances.

- | | |
|------------------------------------|----------|
| 1. Battley's liquor gave | ·4 gr. |
| 2. No. 1 | A trace. |
| 3. Laudanum | ·05 gr. |

The ash of Battley's liquor consisted of sulphate and carbonate of lime, and its washing water was neutral in reaction. The ash of the laudanum consisted of deliquescent carbonate of potash and a lime salt.

Liquor No. 2 was made by boiling gently for half an hour two drachms of crude opium in two ounces of water, neutralizing the acidity of the decoction with milk of lime at the end of that time. The fluid, thrown on a filter, was washed up to fifteen drachms; then five drachms of sp. vin. rect., and four drops of dilute sulphuric acid were added. The use of lime and sulphuric acid was indicated by the composition of the ash of Battley's preparation.

The liquor gave a good yield of microscopic crystals, but less

numerous than was expected. Narcotina was not present. It was found also that the whole of the meconic acid had been removed. Two drachms evaporated, and the residue calcined, gave .5 grain of ash, consisting of sulphate and carbonate of lime and chloride of calcium. The concentration of the liquor by evaporation rendered the crystallization indistinct; heat, therefore, long applied has an injurious tendency. This experiment was varied in several ways, without getting a better result.

Liquor No. 5 was prepared by boiling for a quarter of an hour three drachms of crude opium in two ounces of water. The fluid, thrown on a filter, was washed up to two ounces. The filter was then pressed, and the liquids mixed. The mixed liquids, digested with carbonate of lime to remove free meconic acid, and filtered, were reduced by cautious evaporation to eleven drachms, and four drachms *sp. vin. rect.* added. This addition caused a precipitation that was apparently of a double character, but on examination only meconate of lime could be identified. The chalk, etc., on the filter was washed with water and dissolved in dilute hydrochloric acid. The solution was bitter to taste, contained but a trace of meconic, and no sulphuric acid. Ammonia in excess and ether removed from it a considerable amount of narcotina, which was obtained finely and distinctly crystallized. Subsequent agitation with acetic ether proved the absence of morphia.

The finished liquor gave evidence of the presence of meconic acid, and of another precipitant (? thebolactic acid) of peroxide of iron. Two drachms, evaporated to dryness and the residue calcined, gave .4 grain of ash, consisting mainly of sulphate of lime, with just sufficient reduced sulphide to give it alkalinity. Spontaneously evaporated side by side with Battley's, it gave an inferior crystallization, nor was its flavor comparable with that of the "original." However, it contained no narcotina.

This experiment was varied several times, sometimes with a better, sometimes with a worse result.

Finally, the whole of the samples were mixed and set aside, and for some months forgotten. It was then observed that the bottle containing it had assumed the appearance characteristic

of liq. opii sed., and that the odor and taste of the liquid had sensibly improved. It was therefore tried again as to its crystallographic character, and it was found that the resinous precipitation on the bottle had freed the crystalline bodies from an impediment that had hitherto obstructed their assuming definite forms; the microscope crystallization was, in fact, as good as could be desired, but the liquor having been reduced to the strength of laudanum before being put away, the crystals were only about half as numerous as in the case of the genuine Battley.

The formula I recommend for a liquor opii of the same strength as tinct. opii, B.P., is as follows:—

Take of powdered opium	1½ oz.
Prepared chalk	¼ oz.
Rectified spirits	5 fl. oz.
Distilled water	q. s.

Boil gently for half an hour the opium and chalk with one pint of distilled water; filter; wash up to fifteen ounces, and add the spirit. After a few days' repose, filter again. It improves much by being kept. Of course, the finer the opium, the better the liquor.

Should the narcotina be thought worth recovering, the opium may be boiled with water alone, and the chalk subsequently added. The narcotina may be easily extracted from the dried chalk by boiling it with rectified spirit.

The physiological action of this preparation has been compared with that of opium. It has been found to produce the narcotic effects of that drug, without entailing the unpleasant after-effects so often complained of. I must explain that my Liq. Opii is not designed as a substitute for Battley's preparation, which I invariably use when liq. opii sed. is ordered. It may be regarded as a suggested improvement of ext. opii liq., B.P.—*Lond. Pharm. Journ., Jan., 1869.*

THE ZIRCONIA LIGHT.

Messrs Tessié du Motay and Co., have patented an invention for improvements in preparing zirconia, and the employment of

the same to develop the light of oxyhydrogen flame. The specification is as follows:—

Zirconia, or oxide of zirconium, in whatever manner it may be extracted from its ores, can be agglomerated by compression; for example, into sticks, discs, cylinders, or other forms suitable for being exposed to the flame of mixtures of oxygen and hydrogen, without undergoing fusion or other alteration. Of all the known terrous oxides it is the only one which remains entirely unaltered when submitted to the action of a blowpipe fed by oxygen and hydrogen, or mixture of oxygen with gaseous or liquid carbonated hydrogens. Zirconia is also, of all the terrous oxides, that which, when introduced into an oxyhydrogen flame, develops the most intense and the most fixed light.

To obtain zirconia in a commercial state I extract it from its native ores by transforming by the action of chlorine in the presence of coal or charcoal the silicate of zirconium into double chloride of zirconium and of silicium. The chloride of silicium, which is more volatile than the chloride of zirconium, is separated from the latter by the action of heat; the chloride of zirconium remaining is afterwards converted to the state of oxide by any of the methods now used in chemistry. The zirconia thus obtained is first calcined, then moistened, and submitted in moulds to the action of a press with or without the intervention of agglutinant substances, such as borax, boracic acid, or clay. The sticks, cylinders, discs, or other forms thus agglomerated, are brought to a high temperature, and thus receive a kind of tempering or preparing, the effect of which is to increase their density and molecular compactness.

I can also compress in moulds shaped for the purpose a small quantity of zirconium capable of forming a cylinder or piece of little thickness, which may be united by compression in the same mould to other refractory earths, such as magnesia and clay. In this manner I obtain sticks or pieces of which only the part exposed to the action of the flame is of pure zirconia, while the remaining portion which serves as a support to it is composed of a cheap material.

The property composed by zirconia of being at once the most infusible, the most unalterable, and the most luminous of all the

chemical substances at present known when it is exposed to the action of an oxyhydrogen flame, has never before been discovered, nor has its property of being capable of agglomeration and moulding, either separately or mixed with a small portion of an agglutinant substance.—*Chem. News*, Dec. 11, 1868.

ON METALLIC BISMUTH.

By C. H. WOOD, F.C.S.

The issue of the discussion which has taken place in the *Pharmaceutical Journal*, on the *Liquor Bismuthi et Ammoniae Citratis* of the British Pharmacopœia, is dependent on the nature and amount of the impurities present in commercial bismuth, and the efficiency of the nitre process for their removal. Although several communications from different contributors have been published upon this subject, no one has yet given any exact estimate of the quantity of impurity which the metal usually contains, and the proportion of this which can or cannot be removed by the Pharmacopœia method.

The official process for the purification of bismuth is in accordance with the method indicated by most chemical authorities. Gmelin, Watts, and other authors state that the impurities of bismuth are removed by fusion with nitre. Mr. Schacht's experiments sufficiently demonstrates the possibility of removing the whole of the arsenic by this means. It is true that, in some fusions, Mr. Schacht found a portion of the arsenic still remained in the metal, but we are not informed what the proportions were before or after, and we have every right to assume that, by continuing or repeating the process, the whole might have been removed in these as in the other cases. My own experiments have sufficiently satisfied me that the Pharmacopœia method is an efficient one for the complete removal of arsenic, antimony, and sulphur. The most careful application of Marsh's test has failed to detect either of the former substances in any sample of the metal I have purified.

Mr. Schacht and others, however, have brought forward experiments to show that the nitre process fails to remove the copper from bismuth, and have urged this point as one of the

strongest objections to the Pharmacopœia method. It is certainly true that fusion with nitre is useless for the removal of very small quantities of copper. Down to what proportion it is possible to reduce the copper by this means I am not prepared to say, and I do not know that any experiments have been published on the point. I cannot admit, however, that the nitre fails to remove any portion of this impurity, as some have implied; for the following experiment goes to show the contrary. Messrs. Johnson and Matthey were kind enough to prepare for me a piece of bismuth containing 2·9 per cent. of copper. I fused this for ten minutes with one-fifth its weight of nitre, and then analysed the product. I found it to contain only 1·51 per cent. Consequently, nearly one-half the copper had in this case been removed. Nevertheless, I cannot deny that fusion with nitre fails to remove the last portions of copper, and is therefore useless as far as small percentages of this impurity are concerned.

Admitting this, it becomes important to know the exact amount of copper commonly present in the metallic bismuth of commerce. To ascertain this point, consequently, I have taken three commercial samples of metal, and have made quantitative determinations of the amount of copper in each. The analysis was performed as follows:—One hundred grains of the metal were dissolved in dilute nitric acid, and the solution evaporated until a pellicle formed. About an ounce of a saturated solution of sal ammoniac was then added, the mixture slightly warmed, and diluted to the bulk of thirty or forty ounces with cold water. All the bismuth was thus completely precipitated as insoluble oxychloride, leaving the copper, etc., in solution. After some hours' repose the liquor was filtered, and the precipitate washed. The filtrate was evaporated to about two ounces, and a slight excess of ammonia added. After filtration, the liquor was acidified and precipitated by sulphuretted hydrogen. The sulphide was collected, washed with dilute sulphide of sodium, and dissolved in aqua regia. The solution was evaporated to dryness. The copper in the residue was then estimated, by precipitation with zinc in a platinum dish and weighing as metal, after the manner recommended by Fresenius.

The results obtained were as follows :—

Sample No. 1	. . . .	0·12	per cent.
“ No. 2	. . . .	0·07	“
“ No. 3	. . . .	0·05	“

Liquor bismuthi prepared from the worst of these would contain about 0·0048, grain of copper in one fluid-drachm ; that is to say, less than the $\frac{5}{10}$ th part of a grain in a dose. Mr. W. L. Howie,* in a paper read before the Glasgow Chemists and Druggists' Association, in October, 1866, stated that he found the quantity of copper present in different samples of bismuthi to vary from 0·04 to 0·1 per cent. My results are in close accord with this statement.

The fact that the nitre fusion fails to remove the copper constantly present in commercial bismuth has been the chief argument employed against the Pharmacopœia process for liq. bismuthi. When it is seen that the amount of copper in the metal need never exceed one part in a thousand, and will generally be much less, this objection, I think, loses much of its importance. The total impurities present in the doubly refined bismuth prepared and supplied for pharmaceutical and chemical purposes by Messrs. Johnson and Matthey are stated by the refiners never to exceed 0·5 per cent., and frequently to amount to not more than 0·3 per cent. I venture to think that such metal would bear comparison, in point of purity, with a very large number of chemical products now used in medicine.

But although, at the present day, all commercial bismuth contains an appreciable percentage of impurities, that is so only because there is no demand for a purer metal. In 1865, three years ago, Messrs. Johnson and Matthey exhibited in Dublin a large quantity of *chemically pure* bismuth. This metal was also shown at the Paris Exhibition last year. It can be produced in any quantity when required, and its price at the present time is 40s. per lb., the present cost of the commercial metal of good quality being 19s., and that of the double refined metal already referred to 22s. 6d. A sample of this bismuth was kindly lent to me by Messrs. Johnson and Matthey, and placed upon the

* Pharm. Journ., vol. viii, p. 407.

table at the last Pharmaceutical Meeting. No doubt the comparatively high price of this pure metal has hitherto prevented its use in pharmacy.

Mr. Watson said he had found the same difficulty in the metallic bismuth of commerce that Mr. Wood had; namely, that of getting rid of all traces of copper. There were many different qualities of commercial bismuth in the market, but he had generally found that if they could only procure Saxony bismuth, it contained as little as 0.001 of copper and no arsenic; whereas the qualities generally met with contained 0.004 or 0.5 per cent. The bismuth that had been imported from Australia lately contained a much larger proportion of copper, and also traces of arsenic. He had frequently tried bismuth by fusion with nitre, but could not get rid of the last traces of copper.

Dr. Attfield thought too much had been made of the presence of a trace of copper in bismuth, and too little of other impurities which were colorless. He should like to ask Mr. Wood whether his one part of copper in one thousand of bismuth gave much of a blue color to the liquor, say, when they were looking at a Winchester quart; and he should like to ask Mr. Watson what sort of a result, so far as the eye was concerned, he got with bismuth containing 1-10,000th part of copper? Chemists and druggists generally, he feared, depended too much on the eye and too little on the test-tube.

The President remarked that there was another point of view in which he suspected they looked at it, and that was the cost. If it became a question simply of purity, there was not the slightest difficulty; but it was a question of cost. There had been imported into this country large quantities of bismuth from Australia and Peru, and many of these specimens of metal were certainly very impure; but there is one process which had been found to succeed, and that was at once to crystallize out the nitrate of bismuth, and by operating upon that they would get a bismuth which would be tolerably pure, the impurities remaining in the mother liquor almost entirely. That, however, was a long process, and they could do it with the other process quite well enough for medicinal purposes.

Dr. Redwood mentioned that there was not so much bismuth produced in Saxony now as formerly, the mines not being so fully worked as they used to be.

Mr. Watson, in reply to Dr. Attfield's question as regarded the color inseparable from the solution made by the best Saxon bismuth, said he found they could trace it clearly by the eye by adding a few drops of ammonia. He remembered some few months ago sending out some bismuth to a provincial chemist, containing, he believed, not more than 0.05 of copper, and it was returned to them.

A NEWLY-DISCOVERED PROPERTY OF GUN-COTTON.

Mr. Wood remarked, with reference to Dr. Attfield's inquiry, that the color was due somewhat to the method of making the liquor. If the liquor were made with an appreciable excess of ammonia, and put into a wide bottle of some size, there would be a perceptible tint of color. But it was not necessary to have that excess of ammonia; it was possible to re-neutralize that ammonia by acetic acid; and if they did that there would be no perceptible color, or, at any rate, so far as his experience went, none which would at all interfere with the use of the product in pharmacy. No doubt the whole thing was a matter of cost and of hyper-criticism, because he apprehended that if there were a slight trace of color in the product, as a medicine it would not in the slightest degree interfere. But with regard to the cost he might state that, even in using the chemically pure bismuth which he had referred to, and which Johnson and Matthey sold at 40s., it was possible to make a liquor at 3s. a pound, which, he believed, was the price the original solution was sold at, although that was only one-third the strength of the solution made according to the Pharmacopœia; so that, if chemically pure bismuth was required, its cost ought not to stand in the way.—*Lond. Pharm. Journ.* Jan., 1869.

A NEWLY-DISCOVERED PROPERTY OF GUN-COTTON.

It has been found that the explosive force of gun-cotton may, like that of nitro-glycerin, be developed by the exposure of the substance to the sudden concussion produced by a detonation; and that if exploded by that agency, the suddenness and consequent violence of its action greatly exceed that of its explosion by means of a highly heated body or flame. This is a most important discovery, and one which invests gun-cotton with totally new and valuable characteristics; for it follows, as recent experiments have fully demonstrated, that gun-cotton, even when freely exposed to air, may be made to explode with destructive violence, apparently not inferior to that of nitro-glycerin, simply by employing for its explosion a fuse to which is attached a small detonating charge. Some remarkable results have been already obtained with this new mode of exploding gun-cotton. Large blocks of granite and other very hard rock, and iron plates of some thickness, have been shattered by exploding small charges of gun-cotton, which simply rested upon their upper surfaces—an effect which will be sufficiently surprising to those who have hitherto believed, as every one has be-

lieved, that unconfined gun-cotton was scarcely to be considered as explosive at all, that it puffed harmlessly away into the air, not exerting sufficient force upon the body on which it might be resting to depress a nicely balanced pair of scales, supposing the charge to be fired upon one plate of the scale. Further, long charges or trains of gun-cotton, simply placed upon the ground against stockades of great strength, and wholly unconfined, have been exploded by means of detonating fuzes placed in the centre or at one end of the train, and produced uniformly destructive effects throughout their entire length, the results corresponding to those produce by eight or ten times the amount of gunpowder when applied under the most favorable conditions. Mining and quarrying operations with gun-cotton applied in the new manner have furnished results quite equal to those obtained with nitro-glycerin, and have proved conclusively that if gun-cotton is exploded by detonation it is unnecessary to confine the charge in the blast-hole by the process of hard-tamping, as the explosion of the entire charge takes place too suddenly for its effects to be appreciably diminished by the line of escape presented by the blast-hole. Thus the most dangerous of all operations connected with mining may be dispensed with when gun-cotton fired by the new system is employed. It will readily be observed that this discovery, which we believe is due to Mr. Brown, of the War Office Chemical Establishment, is likely to be attended with the most important results. Not merely is the strength of gun-cotton exploded in this way much greater than that of the same substance fired by simple ignition, but it now operates under conditions which were sufficient under the old system practically to deprive gun-cotton of its power. It has been said, and said justly, that if you want gun-cotton to exert itself you must coax it into the belief that it has a great deal to do. You must give it bonds to break and physical obstacles to overcome, with no outlet or possibility of escape. But now gun-cotton will exert itself, and put forth more than what was believed to be its full strength, whether it see any work to do or not. It will behave as less coy explosives have behaved before it—always with this difference, that it is half-a-dozen times as powerful as any of its rivals, with the exception

of nitro-glycerin, to which in mere power even it is not inferior. This discovery, therefore, can hardly fail to give a considerable impetus to gun-cotton, and to lead to its universal adoption for mining purposes, as soon as its new properties become generally known. In connection with possible military applications the discovery is invaluable. There can no longer be any doubt what agent should be employed for the breaching of stockades and the like; and the absence of all necessity for the use of strong confining envelopes will have an important bearing on the employment of gun-cotton for torpedos and all submarine explosive operations, besides greatly simplifying mining and breaching operations in the field. We have, in fact, discovered several new advantages to add to those which already had sufficed to recommend gun-cotton as an explosive agent in preference to all others. The conditions that are fulfilled by a detonating fuse in determining the violent explosion of gun-cotton, under circumstances which hitherto have been altogether unfavorable to such a result, have been made the subject of investigation by Mr. Abel, and we hope at some future time to notice the conclusions at which he has arrived, as they appear to have a very important general bearing upon the conditions which regulate the development of explosive force, not merely from gun-cotton and nitro-glycerin, but from explosive compounds and mixtures generally. Meanwhile, it is satisfactory to be able to record what has been done, and to add that the subject is now occupying much attention at Woolwich and Chatham, under the intelligent direction of the department to which the discovery is due. —*Chem. News*, Dec. 4, 1868, from *Pall-Mall Gazette*.

HAIR AND HAIR DYES.

The attention which we called, some time since, to the new and perfect black hair dye which Dr. M'Call Anderson lately incidentally hit upon, produced a long series of commentaries from accomplished dermatologists and others, well qualified to speak on the not uninteresting subject. Mr. Erasmus Wilson, a leader amongst the professors of dermatology, now enters upon, and discusses the whole question in a series of very interesting ob-

servations in the 'Journal of Cutaneous Medicine.' He observes, that the hair owes its property of dyeing to its porosity; which is evidently greater than its physiological structure would lead us to infer. Another of its properties, namely, the presence of sulphur in its constitution, renders it prone to darken under the use of certain mineral substances; for example, lead and mercury, whose compounds with sulphur are black. Thus if a weak solution of lead or mercury be brushed into the hair, a certain quantity of the solution will penetrate the hair, and a dark color will be produced in consequence of the formation of a sulphuret of lead or sulphuret of mercury. The depth of the shade of color will depend upon the quantity of sulphur present in the hair, and as red hair and light-colored hair contain more sulphur than dark hair, the result will in that case be comparatively greater. But where the amount of sulphur is too minute to produce the dye, science suggests the means of introducing more sulphur, as is illustrated by a reversal of the process, in the following quotation from a paper by Dr. M'Call Anderson on *Eczema Marginatum*:—"During the treatment I accidentally discovered what promises to be the most perfect black dye for the hair which has been seen. After having used the bichloride lotion for some weeks, I changed it for the lotion of hyposulphite of soda; and the morning after the first application, the hair of the part which before was bright red, had become nearly black. One or two more applications rendered it jet-black, while neither the skin nor the clothing was stained. I saw this patient a couple of weeks later, and there was not the least deterioration of color; although, of course, as the hair grows the new portions will possess the normal tint." The reason of the escape of the epidermis, while the hair was so thoroughly dyed, is that it contains no sulphur. Mr. Balmanno Squire, in a commentary on the above process, observes that if instead of the hyposulphite of soda one of the more common mordants be employed—say, for example, the sulphide of ammonium, "instead of a black, a bright red color will result. The *modus operandi* of Dr. Anderson's dye is this. The hyposulphurous acid, on being liberated from the soda, decomposes into sulphurous acid and sulphur. The sulphurous acid reduces the bichloride of mercury to the

chloride, and the sulphur converts the chloride into (black) sulphide. The effect of the sulphide of ammonium on bichloride of mercury is to produce the (red) bisulphide which is the common vermilion of commerce." Another commentator on "hair dyes" observes that, with the barbers the "sheet-anchor appears to be lead and lime." And again it is recommended to "first wash the hair with a solution (ten grains to the ounce) of nitrate of silver; then use a weak solution of pyrogallie acid, and wash." An interesting article on the subject, from the pen of an able chemical writer, Dr. Scoffern, may be found in the May number of 'Belgravia,' under the head of "Cosmetics for the Hair." Dr. Scoffern reminds us that the Persians employ indigo to procure a blue-black dye, and the Turks and Egyptians a "pasty writing-ink," composed of pyrogallie acid in combination with a native ore of iron, while in the West the chief constituents of hair-dyes are metallic bodies and walnut-juice. The metals chiefly in use as "capillary chromatics" are silver, lead, and arsenic; while others applicable to a similar purpose are gold, bismuth, iron, copper, cadmium, titanium, uranium, and molybdenum. Lead, in its crudest form, is represented by the leaden comb; but as the process by this means is slow, a compound of oxide of lead or litharge, with lime, and made into a paste with water, is more commonly employed. This is smeared on the hair at night, the evolved gases being imprisoned by an oilsilk cap, and in the morning the dried paste is brushed out, and the hair refreshed with pomatum. Or, if a so-called brown, a "smothered" or "fusty black" be required, the paste should be mixed with milk instead of water. The night is preferable for these remedies, because the hair is supposed to exhale more sulphur at this period than during the day. These preparations remind us of a lotion in common use at the present time, consisting of a drachm of acetate of lead with twice the quantity of sulphur to half a pint of water. The nitrate of silver is another common form of dye, but is open to the objection of staining the skin, and, in fact, everything it touches, and also of becoming iridescent on exposure to light, producing, as Dr. Scoffern observes, a "chromatic play of tints," which is very undesirable. Bismuth presents the same characteristics as lead, but is not

much used; and when iron is employed to produce a black tint, it requires for its mordants either the pyrogallie acid or the hydrosulphate of ammonia. Brown is produced by the chloride of gold alone, as also by a solution of sulphate of copper with a mordant of the prussiate of potash (ferrocyanide of potassium); and titanium, uranium and molybdenum, judged by their chemical behavior, would give rise to similar results. The "golden-yellow color," so much in fashion of late, is produced by a solution of arsenic with a mordant of the hydrosulphate of ammonia. And cadmium would probably give rise to a similar result. In the case of dyeing the lighter tints, however, it becomes necessary to submit the hair to a process of bleaching, which is commonly effected by a solution of one or other of the alkalies, by chlorine, by the chloride of soda or lime, or by sulphurous acid, bisulphate of magnesia or lime, or peroxide of hydrogen. In general, the dyes requiring mordants do not stain the epidermis.—*Lond. Pharm. Journ., Jan., 1869, from The British Medical Journal.*

A NEW TEST FOR HYDROCYANIC ACID IN VAPOR.

By M. SCHONBEIN.

M. Schönbein has given to the French Academy of Medicine a description of a new and extremely delicate reagent for the detection of hydrocyanic acid in the state of vapor. It consists of paper imbued with resin of guaiacum, and moistened with a solution of sulphate of copper at the moment of use. In contact with hydrocyanic acid, the prepared paper immediately assumes a blue color. Three parts of resin of guaiacum are dissolved in a hundred parts of rectified spirit. White filtering-paper is steeped in this solution and dried. The paper should remain white. A solution is prepared of one part of sulphate of copper in five hundred parts of water. To employ the test, a slip of the paper is moistened with this solution of sulphate of copper, and brought in contact with hydrocyanic acid, either dissolved in water or diffused in the air, when it immediately becomes blue. The sensitiveness of the reaction is shown by the following experiments:—

A single drop of a solution of hydrocyanic acid containing 1 per cent. of real acid, is placed in a vase of 20 litres capacity. A strip of the prepared paper is suspended by a wire in the middle of the vase, which is then covered. The blue tint rapidly becomes apparent. A drop measures $\frac{1}{20}$ th of a cubic centimetre, and the vase holds 20 litres, or 20,000 cubic centimetres; consequently, the relation of the drop to the vase is 1 to 20 times 20,000, or 1 to 400,000. But the drop contains only 1 per cent. of real acid, therefore the proportion of hydrocyanic acid in the vase is 1 in 400,000 + 100, or 1 in 40,000,000. The author states that this division may be pushed even further, and that 1 in 120,000,000 of air may be detected.

The following experiment indicates the value of this test in toxicological inquiries:—A piece of fresh meat, weighing 600 grammes, was divided into two equal parts; one part was sprinkled with 20 drops of the 1 per cent. solution of hydrocyanic acid, and then exposed to the air for twenty-four hours. At the end of this time it was placed in a vase of 25 litres capacity, and a piece of the test paper suspended over it. In two minutes the coloration of the paper commenced, and a few minutes later was complete. The other piece of meat was kept for comparison, and exposed in another vase in precisely the same manner, but no reaction was obtained. Careful experiments were made with this paper upon the vapors of other acids, but these exerted no influence. The color developed on the paper by hydrocyanic acid remains for a long time, but diminishes as the paper dries. After several days it passes to a greenish-grey, but revives slightly on remoistening the paper.—*Lond. Pharm. Journ., Jan., 1860.*

TURPENTINE AN ANTIDOTE TO PHOSPHORUS.

M. Vigla states that, in a certain lucifer factory, the workmen who dip the matches wear on their chest a little vessel containing essence of turpentine, which is said to preserve the operators from the evil effects of the phosphorous vapors. It is well known that the vapor of turpentine, and many other hydrocarbons completely extinguishes the phosphorescent light which

phosphorus ordinarily emits when in contact with air, and apparently prevents the slow combustion from taking place. Its influence in protecting the workmen may be due to this property.

Dr. Andant relates, in the 'Bulletin Général de Thérapeutique,' a curious case to show the influence of turpentine in phosphorus poisoning. A workman, sixty-three years old, wishing to commit suicide, masticated the tipped ends of a boxful of wax matches. Immediately afterwards, thinking to assist the action of the poison, he swallowed about half an ounce of essence of turpentine mixed with a pint of water. After some time, finding the poison did not act, he chewed the ends of two more boxfuls of matches, and then lay down, as he thought, to die. He suffered from extreme thirst, some pain in the bowels, accompanied by constipation, but nothing more. He had taken the phosphorous contained on about a hundred and fifty matches, but, thanks to the turpentine, he recovered, enduring no ill effects, and with no medical treatment beyond a dose of castor-oil.—*Lond. Pharm. Journ. Jan., 1869.*

ETHERIZED COD-LIVER OIL.

In a paper recently published in the 'British Medical Journal,' by Dr. Balthazar A. Foster, there are certain results of his investigation and observation stated, on the advantage of combining ether with cod-liver oil, which, although in the main, for the consideration of the physician, may not be uninteresting, nor perhaps unimportant, to the pharmacist. Taking it as an established fact, that the difficulty of assimilating fat, is a constant characteristic of the dyspepsia of phthisis, and further, that a marked improvement in such patients is observed when the ability to digest fatty matter is restored, Dr. Foster has set himself to work to determine the best means of "*augmenting the secretions which are specially devoted to the digestion of fatty matters,*" and has determined to his own satisfaction that, "*ether not only obtains for us the secretions required to digest fats, but promotes the absorption of these fats when digested.*" In some cases the ether has been given in water alone before the oil; but the favorite method seems to be to combine the two, in the

proportion of from ten to twenty minims of ether purus, P. B., to two drachms of oil. One advantage of the combination seems to be the power of the former to mask the unpleasant properties of the latter. Dr. Foster recites many cases to prove that where cod-liver oil by itself had failed to produce improvement and to arrest the wasting, the addition of ether has been eminently successful in allaying nausea, and producing a decided increase in the weight of the patient.—*Lond. Pharm. Journ.*, Jan., 1869.

ON THE RELATION OF HYDROGEN TO PALLADIUM.*

By THOMAS GRAHAM, F. R. S., Master of the Mint.

It has often been maintained on chemical grounds that hydrogen gas is the vapor of a highly volatile metal. The idea forces itself upon the mind that palladium with its occluded hydrogen is simply an alloy of this volatile metal in which the volatility of the one element is restrained by its union with the other, and which owes its metallic aspect equally to both constituents. How such a view is borne out by the properties of the compound substance in question will appear by the following examination of the properties of what, assuming its metallic character, would fairly be named hydrogenium.

Density.—The density of palladium when charged with 800 to 900 times its volume of hydrogen gas is perceptibly lowered, but the change cannot be measured accurately by the ordinary method of immersion in water, owing to a continuous evolution of minute hydrogen bubbles which appear to be determined by contact with the liquid. However, the linear dimensions of the charged palladium are altered so considerably that the difference admits of an easy measurement, and furnishes the required density by circulation. Palladium in the form of wire is readily charged with hydrogen by evolving that gas upon the surface of the metal in a galvanometer containing dilute sulphuric acid, as usual.* The length of the wire before and after a charge is found by stretching it on both occasions, by the same moderate weight, such as will not produce permanent distention, over the surface of a flat graduated measure. The measure was graduated to hundredths of an inch, and by means of a vernier the divisions could be read

* Proceed. Royal Society, p. 422, 1868.

to thousandths. The distance between two fine cross lines marked upon the surface of the wire near each of its extremities was observed.

Expt. 1.—The wire has been drawn from welded palladium, and was hard and elastic. The diameter of the wire was 0.462 millimetre; its specific gravity was 12.38, as determined with care. The wire was twisted into a loop at each end, and the mark made near each loop. The loops were varnished so as to limit absorption of gas by the wire to the measured length between the two marks. To straighten the wire, one loop was fixed, and the other connected with a string passing over a pulley and loaded with 1.5 kilogramme, a weight sufficient to straighten the wire without occasioning any undue strain. The wire was charged with hydrogen by making it the negative electrode of a small Bunsen's battery consisting of two cells, each of half a litre in capacity. The positive electrode was a thick platinum wire placed side by side with the palladium wire, and extending the whole length of the latter, within a tall jar filled with dilute sulphuric acid. The palladium wire had, in consequence, hydrogen carried to the surface for a period of one and a half hour. A longer exposure was found not to add sensibly to the charge of hydrogen acquired by the wire. The wire was again measured, and the increase in length noted. Finally, the wire being dried with a cloth, was divided at the marks, and the charged portion heated in a long narrow glass tube kept vacuum by a Sprengel aspirator. The whole occluded hydrogen was thus collected and measured; its volume is reduced by calculation to Bar. 760 m.m., and Therm. 0° C.

The original length of the palladium wire exposed was 609.144 m.m. (23.982 inches), and its weight 1.6832 gm. The wire received a charge of hydrogen amounting to 936 times its volume, measuring 128 c.c., and therefore weighing 0.01147 gm. When the gas was ultimately expelled, the loss as ascertained by direct weighing was 0.01164 gm. The charged wire measured 618.923 m.m., showing an increase in length of 9.779 m.m. (0.385 inch). The increase in linear dimensions is from 100 to 101.605; and in cubic capacity assuming the expansion to be equal in all directions, from 100 to 104.908. Supposing the two metals united

without any change of volume, the alloy may therefore be said to be composed of—

	By volume.	
Palladium,	100	or 95·32
Hydrogenium,	4·908	or 4·68
	<hr/> 104·908	<hr/> 100

The expansion which the palladium undergoes appears enormous if viewed as a change of bulk in the metal only, due to any conceivable physical force, amounting as it does to sixteen times the dilatation of palladium when heated from 0° to 100° C. The density of the charged wire is reduced by calculation from 12·3 to 11·79. Again, as 100 is to 4·91, so the volume of the palladium, 0·1358 c.c. is to the volume of the hydrogenium 0·006714 c.c. Finally dividing the weight of the hydrogenium, 0·01147 grm by its volume in the alloy, 0·006714 c.c. we find

Density of hydrogenium 1·708

The density of hydrogenium, then, appears to approach that of magnesium, 1·743, by this first experiment.

Further, the expulsion of hydrogen from the wire, however caused, is attended with an extraordinary contraction of the latter. On expelling the hydrogen by a moderate heat, the wire not only receded to its original length, but fell as much below that zero as it had previously risen above it. The palladium wire first measuring 609·144 m.m., and which increased 9·77 m.m., was ultimately reduced to 599·444 m.m., and contracted 9·7 m.m. The wire is permanently shortened. The density of the palladium did not increase, but fell slightly at the same time, namely, from 12·38 to 12·12; proving that this contraction of the wire is in length only. The result is the converse of extension by wire-drawing. The retraction of the wire is possibly due to an effect of wire-drawing, in leaving the particles of metal in a state of unequal tension, a tension which is excessive in the direction of the length of the wire. The metallic particles would seem to become mobile, and to right themselves in proportion as the hydrogen escapes; and the wire contracts in length, expanding, as appears by its final density, in other directions at the same time.

A wire so charged with hydrogen, if rubbed with the powder

of magnesia (to make the flame luminous), burns like a waxed thread when ignited in the flame of a lamp.

[The foregoing is about a quarter of the paper of Prof. Graham, which is too long for insertion in this journal. What follows is an abbreviation of the remainder.—ED. AM. JOUR. PHARM.]

Expt. 2.—Another portion of the same palladium wire was charged as before with hydrogen. Length of wire 488·976 m.m., gas occluded, 867·15 $\frac{1}{4}$ volumes; linear elongation 6·68 m.m.; density of hydrogenium 1·898.

Expt. 3.—Length of wire 556·185 m.m., gas occluded 888·303 volumes; linear elongation 7·467 m. m.; density of hydrogenium 1·977.

Various other experiments were made, showing a remarkable approximation in density, except in one instance, which was considered exceptional—viz: 2·055, 1·930, 1·927, 1·917, 1·898, 1·977, 1·708. The mean density excluding the last is 1·951 or nearly 2.

A curious result was that, in charging and discharging of the same palladium wire, it became shorter each time, but as the specific gravity of the metal was unaltered, it follows that the contraction in length was accompanied by expansion in diameter. Repeated experiment on the same wire reduced its length 15 per cent. This retraction was also proved to not be due to heat, as it occurred when the hydrogen was removed at the ordinary temperature by making it, the wire, the positive electrode of the battery so as to oxidize the hydrogen. Repeated charging and discharging by heat reduced the absorbing capacity of the wire to one-third. This capacity is partially restored by the passage of an electrical current while red hot, and may be restored fully by extracting the hydrogen by electrolysis in an acid fluid. The molecular structure of the palladium appears to undergo great changes by the repeated absorption and removal of the hydrogen.

2. *Tenacity.*—Palladium wire similar to the last was broken by from 10 to 10·17 kilogrammes weight; when charged with hydrogen it was broken on an average by 8·22 kilogrammes. The tenacity of the palladium is found to be somewhat reduced after the removal of the hydrogen.

3. *Electrical Conductivity.*—Careful experiments by Mr. Becker gave the relative conducting power of the metal and alloy

with copper as follows, viz: Pure copper 100, palladium 8.10, alloy of 80 copper + 20 nickel 6.63, palladium and hydrogen 5.99. This is in accordance with the usual decreased conducting power of alloys, and is in favor of the metallic character of hydrogenium.

4. *Magnetism*.—Faraday determined palladium to be “feebly but truly magnetic.” Various careful and ingenious experiments were made with the alloyed wire, the results of which cause Prof. Graham to believe that hydrogenium is magnetic, a property which is confined to metals and their compounds, and is so much more magnetic than palladium that he inclines to range it in the strictly magnetic group with iron, nickel, cobalt, chromium and manganese.

Palladium with Hydrogen at a High Temperature.—Heated palladium is readily permeated by hydrogen gas by a process analogous to cementation. Four litres of hydrogen per minute was passed through a palladium plate 1 m.m. in thickness and a square metre of surface at a bright red heat.

The Chemical Properties of hydrogenium distinguish it from gaseous hydrogen. The palladium alloy precipitates mercury and calomel from a solution of corrosive sublimate without any disengagement of hydrogen. Hydrogenium (alloyed with palladium), unites with chlorine and iodine in the dark, reduces a persalt of iron to the proto state, converts red into yellow prussiate of potash, and has considerable deoxidizing power. It appears to be the active form of hydrogen, as ozone is of oxygen.

The general conclusions arrived at are, that fully charged palladium is an alloy of one equivalent of each metal; that both are solid, metallic, and of white aspect; that the alloy contains about 20 volumes of palladium united to one volume of hydrogenium; that the density of the latter is about 2, a little higher than magnesium, to which metal it is supposed to bear some analogy; that hydrogenium has a certain amount of tenacity, and possesses the electrical conductivity of a metal; and, finally, that hydrogenium takes its place among magnetic metals. The latter fact in connection with the appearance of hydrogen in meteoric iron opens out a subject of speculation.—*Chem. News, Jan. 29th, and read before Royal Soc. Jan. 14th.*

List of the Contributors to the Building Fund for the New Hall of the Philadelphia College of Pharmacy. (Continued from Page 88, of this volume).

A. H. Wirz,	\$ 25 00	A. C. Merritt,	10 00
D. Jamison, Jr.,	10 00	Jos. B. Shropshire,	5 00
P. J. Hassard,	50 00	Nelson Shropshire,	5 00
John W. Biddle,	25 00	A. Roidot,	15 00
Geo. M. Fried,	10 00	Gilbert Royal & Co.,	50 00
Whitall, Tatum & Co.,	100 00	C. Collin Hughes,	10 00
John Lucas & Co.,	50 00	G. W. Vaughan,	10 00
J. Thornton Weaver,	10 00	H. B. Taylor,	10 00
W. J. Jenks,	50 00		
Wright & Siddall,	10 00		\$ 535 00
William C. Bakes,	10 00	Previously,	7487 50
Crawford & Fobes,	10 00		
Chas. A. Heinitsch,	10 00	Total contributions,	\$8022 50
Elliot, White & Co.,	50 00		

Editorial Department.

LEGISLATION FOR PHARMACY IN PENNSYLVANIA.—The Press newspaper of Philadelphia, of Feb. 3d, contained an article speaking in highly disrespectful terms of the drug trade of Philadelphia for an alleged use of their influence in defeating a bill before the legislature on the subject of drug inspection, in which the editor says :

"The medical men of the City, (Philada.) seconded by the profession everywhere, besought the legislature to take such steps as would lead to the sale of only pure drugs."

Then follow the reasons why the law is required, giving an account of the practices alleged to be common in the adulteration of drugs and their effects on medical practice.

"The memorial closes by proposing a bill which provides penalties against adulterations and authorizes the appointment of an inspector of drugs similar to those of flour, whiskey, etc." But who was to have a large salary and extraordinary powers.

"This action on the part of the physicians, who really are the only ones who know the extent of the iniquitous practices they sought to provide against, aroused unwonted indignation among our druggists, and a bevy of the more irate armed with caustic (unadulterated this time) set off for the seat of war at the capital. Their medicines operated with instantaneous and powerful effect. The legislators were physicked out of their propriety, and the drug men returned home in triumph to sell without inspection what they pleased."

Now this last paragraph is an absolute myth—there is no truth in it; the druggists and pharmacutists of Philadelphia were taken by surprise.

At the meeting of the Drug Exchange on that day no one knew anything of the matter, and a committee was appointed, who reported next day that all they could learn about it was that a Senator of Pennsylvania wrote down to a prominent member of the College of Pharmacy, to know whether the bill before the legislature, which he described, was approved by the College, etc. The member wrote back that the College and trade here knew nothing of it, that the bill contained features that would render its working impracticable, and would not reach the evils it sought to cure, and further that the National Pharmaceutical Association had had since September last a large and influential committee at work preparing a law to be presented to the legislatures of every State in the Union next winter, after it was approved by the Association which meets in September next. This was the only offence on which the vituperative article of the Press was based. We have made it our business to query of every prominent physician we have met, and, as yet, not a single one of them knew any thing about the memorial; but we have since learned more than we are disposed to repeat about the origin and objects of the bill to create a fat office, the incumbent to be nominated by a medical society and appointed by the Governor.

A temperate and well written reply was tendered to the Editor of the Press for publication, which he refused to receive, and subsequently, after being read at the Drug Exchange, that body adopted it, and signed by its officers it appeared in the *Inquirer* of Feb. 11th. The next day the Drug Exchange issued a printed memorial directed "to the Philadelphia Representatives at Harrisburg," requesting "that copies of any bill or bills regarding the manufacture and sale of drugs and medicines be forwarded to that body, as also to the Philadelphia College of Pharmacy." "They also respectfully ask that any proposed legislation on the subject be postponed until a proper representation of the subject be made by the Executive Board of the Philadelphia College of Pharmacy." "It is the wish of this body, as also of the College of Pharmacy, that such legislation be effected as will afford a *real safeguard* to the public on the important subjects of Medicines and the Sale of Poisons."

Disappointed in their first attempt, another bill was entered, styled "An Act to prevent adulteration in drugs," in four sections; the *first* declaring the adulteration of any drug or medicinal preparation to be a penal offence, recognizable by the Court of Quarter Sessions, with a penalty fine not exceeding 1000 dollars.

The *second* declares that every person violating the provisions of this act may be presented by the District Attorney to the Grand Jury for indictment, as in other cases. So far all is unobjectionable, but section *third* provides that any resident physician of the county, who is a "graduate of medicine and pharmacy," may complain under oath or affirmation before any alderman or justice of the peace, that there is reasonable ground for believing the Act has been violated, said complainant may

file a list of such alleged adulterated articles, and may obtain a search warrant, directed to any constable, who shall accompany him (the complainant) to said store or factory and bring the said drugs and their owner or custodian before said alderman to be dealt with according to law.

The *fourth* section provides for the destruction of the adulterated drugs by the Court of Quarter Sessions.

On the reception of a copy of this bill, a meeting of the Board of Trustees of the College of Pharmacy was called at once. The proposed law was read and also the action of the Drug Exchange in regard to the matter. After a free and candid interchange of opinion, the present bill was declared to be wholly inadequate to remove the evil aimed at, and in practice took no cognizance of the greater evil of incompetent and uneducated dispensers, and could not be carried out without an amount of injustice and oppression at variance with the rights of citizens and the character of the pharmaceutical body. As the action of the Legislature on *some* bill seemed imminent, a committee was appointed to act in concert with those members of the Association's Committee, residents in Philadelphia, to draft a law, based on the yet unperfected law of said committee, and submit it to an adjourned meeting of the Board. This joint committee met and soon found that the bill would prove a failure if time was not given to consider it closely, especially in relation to the education and qualification of all apothecaries establishing stores in future; which being reported to the Board, it was deemed both wise and respectful to appoint a committee of their body to proceed to Harrisburg and explain the whole matter clearly to the judiciary committee and to such other members of the Senate and House as opportunity offered. The committee, Professors Parrish and Maisch, were well received at the State Capital performed their duty, and returned with the understanding that an effort would be made to suspend any hasty legislation on the subject until next session, so as to give time to the American Pharmaceutical Association to perfect its draft of a law covering the whole subject of Drugs, Poisons and Education.

Why this persistent effort *in the name of the Physicians of Philadelphia* should be prosecuted so vigorously to bring about an inspection of drugs, when the subject, much more important to physicians, of the proper qualifications of those who deal in and dispense them is wholly overlooked we cannot divine, but the whole affair looks like a short-sighted effort at special legislation gotten up for a purpose very far from that which appears on the face of the bill.

LEGISLATION ON PHARMACY IN OHIO.—The attempt made in Cincinnati to induce the Board of Health to interfere in the practice of pharmacy, noticed at page 83 of last number, did not succeed. Since then, we learn from a Cincinnati paper, that Dr. W. Clendenin, health officer, brought forward a proposition applicable to physicians, midwives and

apothecaries, making it necessary for all, within a given time, to present proofs of their competency to practice medicine, midwifery and pharmacy. If the proofs thus presented were deemed insufficient, each medical man and midwife should within three days submit to a medical board of examiners nominated by the Board of Health, and each druggist or apothecary to a board consisting of three prominent druggists, and on refusal of any to so submit, they should be prevented from practicing within the limits of Cincinnati on penalty of fine. The questions and answers were to be in writing. Probably the Board found on consideration it was assuming powers not delegated, and that they had better leave such legislation to the State authorities.

Since then a bill has been brought before the Ohio legislature and has been pending some time, but Prof. Maisch has received information from a member of that body that it had been determined to postpone action on the subject until the American Pharmaceutical Association has time to perfect its proposed law in September, next, when they will consider its merits when presented. We hope the Legislature of Pennsylvania will adopt the same course.

TO OUR READERS.—In the January number of this Journal, in commenting on the late serious poisoning case, we headed our article "Death caused by the ignorance of an apothecary and the bad writing of a physician." At the time of writing the article our knowledge of the prescription for Mrs Hecht was from published evidence and verbal statements; these, in connection with a prescription of the same physician, received and dispensed by us a few days after the sad event, in which the second letter of the abbreviation "Asafæet." was made more like a 't' than an 's' caused us to believe the latter was his usual way of writing the word, and that he had incurred a degree of moral responsibility thereby. Since then Dr. Philip DeYoung, the prescriber of the dose, called on us, feeling himself sorely aggrieved by our remarks, and invited us to go to the coroner and see the original prescription. This we have since done, and, contrary to our expectation found the word decidedly more legible than in the prescription received by us, the 's' being tolerably well marked, so as to spell Asafæet.

Under these circumstances it is due to truth to correct our record, and justice requires us to modify the opinion expressed in our January number so far as to say, after seeing the original prescription, that any apothecary of ordinary qualification should have been able to read it as the prescriber intended. We regret having caused Dr. DeYoung undeserved pain, his feelings already lacerated by the loss of his sister, a circumstance lost sight of at the time—in fact our comments, so far as the Doctor was concerned, were a second thought, intended mainly to show the vital importance of care in writing prescriptions, for the sake of the patient, as well as the apothecary, who is constantly running grave

risks in compounding prescriptions owing to the illegible manner in which they are often written. It seems to us, in view of the yet imperfect education of many to whose lot dispensing falls, that physicians should make their prescriptions so plain as to be read by even the *mediocre*.

THE COMMENCEMENT OF THE PHILADELPHIA COLLEGE OF PHARMACY will be held in the Academy of Music, at noon, on the 23d of March, on which occasion the graduates of the present session will receive their degrees. This will be the first time the ceremony has taken place in the day time; the evening having heretofore always been selected in preference. The valedictory will be given by Prof. John M. Maisch.

MEETING OF THE ALUMNI.—We are informed by a Committee of this Association, that a meeting of its members will be held at three o'clock in the afternoon on the 23d of March, in the First Lecture Room of the New College Hall, followed by a social *conversazione*; after which "a Tea will be served in the lower Hall, when short addresses will be delivered by members of the various classes in attendance." The Committee further say that "cards of admission will be issued at \$1.50 each; and in order to facilitate their arrangements, it is desirable that those who wish to attend should procure their tickets of the Committee, (Messrs. Clemmons Parrish, 800 Arch Street; Charles L. Eberle, Germantown; Samuel T. Jones, 15th and Race Sts., and William C. Bakes, 800 Arch St.), before the 18th of March.

MARYLAND COLLEGE OF PHARMACY.—Safely put aside for notice, the *Circular* of the Maryland College lay ensconced, where it has just been discovered. We don't remember when it was received, but presume about the time of the meeting of the Association, when all were busy. An apology is due to our Baltimore friends for this oversight, as it has always been our wish to notice these circulars when received. Though too late to be of service to their school, it is not too late to say that the officers of the College, when the circular was issued, were Geo. W. Andrews, *President*; J. Faris Moore and E. Walter Russell, *Vice-Presidents*; I. P. Frames, *Secretary*; J. Brown Baxley, *Treasurer*; W. S. Thompson, J. F. Hancock and N. H. Jennings, *Examiners*.

The Faculty consists of J. Faris Moore, M. D., *Prof. of Pharmacy*, T. H. Helsby, M. D., *Prof. of Chemistry*, and Claude Baxley, M. D., *Prof. of Materia Medica*.

The circular is gotten up in a spirit and style unexcelled by that of any other school of pharmacy, and calculated to give a favorable impression of the management of the Maryland College of Pharmacy.

SVAPNIA AND SWEET QUININE.—Svapnia is a trade name applied by Frederick Stearns to the purified titrated extract of opium, suggested by Dr. J. M. Bigelow, of Detroit. The merits claimed for it are, first, that

it is uniform in morphia strength, second, that it contains only the alkaloids morphia, codeia and narceia, combined with meconic (and perhaps thebolactic) acid. How far the manufacturers will be able to keep the composition uniform we do not know. If they can do what they claim to do, the preparation certainly merits attention. Neither the label nor the accompanying wrapper give the actual morphia strength, which, as it is said to be uniform, should be given. It is to be regretted that a substance so costly as opium should be rendered yet more so by making it a speciality. In our next we propose to give some further remarks in relation to this preparation, meanwhile hazarding the opinion that, medicinally, it is not better than the deodorized tincture of the Pharmacopœia.

Sweet Quinine, another novelty, is, according to the wrapper, quinia molecules coated with glycyrrhizin. That is to say, the alkaloid quinia, as precipitated from the sulphate, intimately admixed with the sugar of liquorice. It follows that it is necessary to avoid the use of acid or spirituous solvents in connection with sweet quinine, which immediately develop the bitterness, one by salifying the alkaloid, the other by dissolving it. The quality of liquorice to mask the taste of quinine, aloes, &c., has long been known to some persons, and we know one physician who has long prescribed it with this view. There is no doubt that the opinion of Mr. Harrop, at page 117 of this number, is correct, that the glycyrrhizin in commercial extract is altered by heat, and that fluid extract of liquorice root is better than a solution of the extract for mixtures. We should think Tilden's extract of liquorice root, made in vacuo, would be far superior to the imported for this purpose.

GORDEN'S "CONCENTRATED GLYCERIN."—The manufacturer of this article has sent us a bottle, as a specimen of his production, of the grade indicated by the above name. It is colorless, has a very slight odor only, and is not affected by oxalate of ammonia or nitrate of silver.

Its specific gravity, carefully reduced to 60° F., indicated by a good Berlin hydrometer, is 1.231. It is therefore not quite so dense as the Pharmacopœia requires, yet for many purposes it will replace the purest "inodorous glycerin," which he also makes. The price of this article is quoted at 35 cents per pound wholesale. The multiplied uses of this most valuable substance in pharmacy and the arts renders the reduction of its price a benefit to society, like that of the artificial process for soda was in the soap manufacture.

CREW'S EXTRACT OF BEEF.—Our attention has been called to this new variety of extract of beef, which claims to be made in vacuo and from non-gelatinous portions of the beef, so that it is entirely free from gelatine. Its consistence is that of thick honey; it is entirely and readily soluble in cold water. It is not coagulated by heat, but is precipitated by alcohol and by tannic acid. It is neatly put up in porcelain jars, two

ounces in each and capped. Each jar represents $3\frac{1}{2}$ pounds of beef, or 28 times the weight of the extract. Our preference has been in favor of the solid gelatinous extract, as keeping better, but we are informed that this non-gelatinous extract has been much liked by those who have tried it.

ERRATUM.—At page 5 of the last number, line 4 from the bottom, read "farther hole" instead of "father's hall."

A History of the Medical Department of the University of Pennsylvania from its foundation in 1765, with sketches of the lives of deceased Professors. By Joseph Carson, M.D., Prof. of Materia Medica and Pharmacy in the University, &c., &c., Philadelphia. Lindsay and Blakiston, 1869; pp. 227, octavo.

In the preparation of this book Dr. Carson has spared no labor that would add to its completeness, and in *it* he has made a valuable addition to the literature of medicine in America, by giving so minutely the gradual steps followed by the oldest Medical Institution in the United States in attaining to its present justly deserved position. The long list of medical worthies directly and indirectly connected with the University renders the biographical portions of the book full of interest. Originally written as an introductory lecture on the centenary anniversary of the School of Medicine of the University in 1865, these sketches were necessarily brief, but after deciding to enlarge the scope of the work and continue it to a later date, these notices were extended, and numerous foot-notes introduced. The notices of Griffitts, Wister, Rush, Barton, Coxe and Hare, have much interest to the pharmacist. The former in 1788, after his return from Europe, made the initial effort in favor of a national pharmacopœia by causing the appointment of a committee of eight of the College of Physicians, which included the names of Shippen, Rush, Griffitts and Wister, but it was not until 1820 that the seed thus sown bore fruit in the first National Pharmacopœia of 1820. The influence of Barton on the culture of the Natural Sciences, and especially of Botany, by his personal exertions, patronage of others, and the influence he exerted on and through his pupils, has left a lasting impression on science in America.

The circumstances indirectly connecting the University with the foundation of the Philadelphia College of Pharmacy, as quoted by Prof. Parrish, (see page of this number, are fully given by Dr. Carson from the minutes of the University.

In speaking of Dr. Hare, an opportunity was afforded to bring together the history of the discovery of the oxyhydrogen blow pipe and other suggestions, which have been dealt with unfairly abroad. The importance of that discovery on the metallurgic process for the working of platinum and other refractory metals, first suggested by Dr. Hare, and afterwards greatly improved by the labors of Deville and others, should cause him to be held in lasting remembrance.

But our space is exhausted, leaving unnoticed much that would interest our readers from the attractive pages of Dr. Carson's book, relative to Drs. Chapman, Coxe, and others. The long and intimate connection of the Professors of the University Physicians with the Pennsylvania Hospital and the Alms House, has called forth a chapter on Clinical Instruction. Previously to 1834 the clinics had always been delivered at the bed side, to the obvious inconvenience if not injury of some patients. In that year the present method of assembling the class in the amphitheatre, and presenting such of the patients as were desirable to them in clinical lectures, was introduced by Dr. Benjamin H. Coates, then senior physician. There is also a chapter on the history of the buildings occupied by the University of considerable interest to Philadelphians, but we will merely say that the corner stone of the present structure was laid on the 21st of March, 1829, just forty years ago. From the beginning the University has graduated nearly eight thousand pupils, nearly three fourths of whom issued from the present Hall.

Proceedings of the American Pharmaceutical Association, at the Sixteenth annual meeting, held in Philadelphia, September, 1868; also the Constitution and roll of members. Philadelphia, 1869. Pp. 506. Oct.

Just as we are closing this form the Proceedings of the Association, now in the hands of the binder, are submitted to us in sheets, too late to prepare a fitting notice, yet some of its features may be mentioned. The minutes of the seven sessions occupy more than a hundred pages, much of it in small type, and includes nearly the whole of the stenographer's report of the discussions, many of them of great importance, in relation to questions interesting pharmacutists generally, as that on the renewal of prescriptions, and that arising out of the Report on the Drug Trade; also the comments upon the papers read, giving the experience and views of the members on the same subjects. The *Report on the Progress of Pharmacy*, which we have not had the opportunity to more than glance over, is very comprehensive, covering about 150 printed pages. Mr. Diehl has had heavy labor in getting it together, especially as a large portion is derived from the German Journals. The Secretary informs us that the French Journals are not received by him in exchange for the Proceedings, as they should be. This may be remedied by correspondence. The *Report on the Drug Market*, with its accompanying tables, occupies about forty pages, that on *Legislation relating to Pharmacy* about the same, and the special reports on scientific subjects and volunteer essays about 90 pages. (Most of the latter have been printed in this and the preceding number of this Journal.) The Secretary has made out the roll on a new plan. The names of members are arranged under the towns and cities, and these under the names of States, in their alphabetical order. The members in each town or city are in alphabetical order, but with the given name first. This has involved much labor, but

it will greatly facilitate the use of the roll for reference, and in mailing the Proceedings and sending letters and notices.

The delay which has attended the publication of the Proceedings has arisen partly from the unusual character and volume of the reports, and partly from the time required to perfect the roll and to get the extra copies of reports printed. The Secretary has had an unusual amount of labor, and the Association may well be satisfied with the manner in which the labor has been performed, both by him and the Chairman of the Executive Committee.

The paper is unusually good, and we are informed that the binding will be in keeping. The price fixed on by the Committee is \$2.50.

We hope to give the reports a careful examination hereafter.

A Conspectus of the Medical Sciences; comprising manuals of anatomy, physiology, chemistry, materia medica, practice of medicine, surgery and obstetrics, for the use of students. By Henry Hartshorne, M.D., &c., &c., with 310 illustrations. Philadelphia; Henry C. Lea, 1869; pp. 1002, 12 mo.

This work is analogous in construction to Smith and Neills' compend of Medicine, published originally about twenty years ago. Like it, the present work is intended as an aid to the student in his battle with the numerous voluminous text books which oppose his onward course in attaining his diploma within the short period of study now deemed sufficient to pass the examinations. To some, such aids are not needed—such minds are capable of selecting and retaining a grasp on knowledge, whether presented by the lecturer or the complier—their faculties are directed like the rays by a lens to the very point needed, attain the object and lay it by for future use. On the other hand a larger number, less favored by nature, have to seek every artificial aid that presents itself to enable their minds to grasp and retain the numerous intricate principles of the Medical Sciences, and to remember the endless details of anatomy, materia medica, and of those all important practical truths involved in medical practice. To such the "Conspectus" of Dr. Hartshorne will prove a boon—for it is carefully written, well arranged, and in some parts admirably illustrated. Some errors have crept in, the most important we have noticed is giving the strength of Magendie's solution of morphia, (page 757), at 2 grs. per fluidounce instead of 16 grains. Some errors of the press also, as the wrong names are placed under the illustrations at pages 454 and 451. The book is well bound in sheep.

Pronouncing Medical Lexicon. Containing the correct pronunciation and definition of terms used in medicine and the collateral sciences. With addenda, &c. By C. H. Cleaveland, M.D. Eleventh edition. Philadelphia. Lindsay & Blakiston, 1869; pp. 302, 18 mo.

This useful little companion to the medical reader is here offered in its

eleventh edition, which of itself is a strong evidence in favor of its usefulness. We have often derived aid from its brief definitions. "Doctors disagree" in the matter of pronunciation as well as in the more professional matters. Those who will take the pains to study the characters given by Dr. Cleveland, will find them a profitable aid, but we prefer the ordinary method of indicating pronunciation.

Essentials of the Principles and Practice of Medicine. A hand book for Students and Practitioners. By Henry Hartshorne, M.D., Prof. of Hygiene in the University of Pennsylvania, &c., &c. Second edition, revised and improved. Philadelphia. Henry C. Lea, 1869; pp. 450, 12 mo.

Sometimes more is said in a paragraph by one than in a chapter by another. Earnest endeavor at perspicuity and terseness, with a methodical arrangement of facts, avoiding all unnecessary repetitions, will enable a qualified writer to condense a subject even so complex in its bearings as practical medicine into a comparatively small space, and in such a manner as to be very useful to the practitioner in recalling his past reading, and to the student in enabling him to grasp subjects more easily than he would be able to do with a large treatise. Of this character is the book of Dr. Hartshorne; no matter to what important disease the reader turns, he finds it brought out in miniature so that its features may be recognized nearly as well as in a larger portraiture. The country practitioner will find it a useful and readily portable companion.

The Physician's dose and symptom book. containing the doses and uses of all the principal articles of the materia medica and officinal preparations, &c., &c. By Joseph H. Wythes, A.M., M.D., &c. Eighth edition. Philadelphia. Lindsay & Blackiston, 1868; 18 mo, pp. 263.

After passing through *eight* editions this little book must be well known to medical practitioners as an aid to memory in prescribing. The medical journals should give it a critical examination in regard to doses.

The American Edition of the Chemical News is now published monthly, with an "American supplement" edited by Prof. C. A. Seely. Price per number 50 cents, or per year \$5.00. It would be an improvement if the date of the English number was indicated in the line in brackets at the foot of the page, thus:

[English edition, Vol. xviii, No. 471, Dec. 11th, page 278.]

Half Yearly abstract of the Medical Sciences, being a digest of British and continental medicine, and of the progress of medicine and the collateral sciences. Vol. xlviii, July to Dec., 1868. Philadelphia, H. C. Lea, 1869, pp. 292.

Braithwaite's Retrospect of practical Medicine and Surgery. Part lviii, Jan., 1869. W. A. Townsend & Adams publishers. New York, pp. 308.

Our thanks are due to the publishers respectively for these useful semi-annuals, which are full of valuable medical information.

OBITUARY.

DR. VON MARTIUS.—Died, on the 13th of December, 1868, in the 75th year of his age, Dr. Carl Friedrich Philipp Von Martius, ex-Professor of Botany in the University, and Secretary of the Mathematico-physical Class of the Academy of Sciences at Munich, Foreign Member of the Royal and Linnean Societies of London, and of the Pharmaceutical Society of Great Britain.

Few names among the philosophers of Germany occupy a higher place than that of this eminent savant, whose brilliant and versatile genius and unceasing activity enriched all branches of literature and science. Among botanists Dr. Von Martius will ever be remembered as the author of a grand work on palms, in three splendid folio volumes, which it took 27 years to complete; and also for his Flora of Brazil, a work of even greater magnitude, commenced in 1840, and still carried on with the coöperation of other botanists. He also wrote two small publications on Brazilian Materia Medica, and numerous papers on ethnographical and philological subjects. In private life Dr. Von Martius was remarkable for his amiability and great conversational powers.—*Pharm. Jour.*, Feb., 1869.

EDWIN R. SMITH died on the 10th of November, 1868, at his home in Monmouth county, Illinois, at the age of 29 years, from hemorrhage of the lungs. Mr. Smith graduated in the scientific department of Monmouth College, Class 1860, and in 1862 he became a Graduate of Pharmacy of the Philadelphia College of Pharmacy, in order that he might secure the requisite qualifications for his future profession, in which it was his highest ambition to excel. Since his graduation at Philadelphia he had been associated with his father in business, where, from his thorough knowledge of his profession, devotion to business, and unbending integrity, few gave promise of a more useful life, or the enjoyment of a larger measure of respect and confidence in the community among which he dwelt. He was also an active member of the American Pharmaceutical Association, of which he became a member in 1862. A. E. E.

JOHN E. CORBIDGE died on the 29th of January, 1869, at his home in Chicago, Ill., at the age of 25½ years. He had but of late returned to this city, having been absent for two years at Philadelphia, attending the lectures of the Philadelphia College of Pharmacy, of which he became a graduate in March, 1868. Shortly after his return he contracted disease of the lungs, which terminated his career of usefulness. A. E. E.

DR. WILLIAM B. HERAPATH, of Bristol, Eng., eminent as a toxicological chemist, (and son of the late Dr. W. Herapath, whose decease was recorded last May,) died in October last in his 48th year. Dr. Herapath possessed an active mind, and pursued chemistry with so much success that his discoveries won for him membership in the Royal Society and other learned bodies. The discovery and investigation of the sulphate of iodoquinia and the corresponding salts of the other cinchona alkalies, is that by which he is best known, though his observations have been quite numerous. He leaves a widow and six children, and is deeply regretted by a large circle of professional friends,

THE
AMERICAN JOURNAL OF PHARMACY.

~~~~~  
MAY, 1869.  
~~~~~

QUANTITATIVE DETERMINATION OF THE AMOUNT OF
TANNIN IN VARIOUS VEGETABLE ASTRINGENTS.

BY HENRY K. BOWMAN.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

Numerous methods have been employed for the purpose of determining the amount of tannin in astringents. Of these probably none are equal to Muller's, which appears to be the most definite in its results and the easiest in its application.

Muller prepares a standard solution by dissolving 18 grammes of gelatin and $2\frac{1}{2}$ grammes of alum in 320 centimetres of water; 31 cubic centimetres of this solution precipitate one gramme of tannin. To extract the tannin he powders the substance containing it; places the powder in a flask and adds sufficient hot water to cover it; he then boils it for a few moments and decants the liquor carefully into a precipitating glass. This operation is repeated five or six times with more water and at last powder and all are poured into the glass. The presence of the powder does not interfere with the precipitation of the tannin, but even favors the clarification of the liquid; after cooling, the standard solution is added as long as a whitish cloud is formed in the clear liquid.

The principles involved in Muller's method were carried out in determining the amount of tannin in the following substances, although the manner of applying them was slightly changed. A solution of gelatin of the strength employed by Muller being

too thick to use conveniently, a solution of half the strength was used, which was better adapted to the purpose. Most of the gelatin to be obtained not being pure, it was found necessary to determine the strength of each solution of gelatin employed; this was done by determining the number of cubic centimetres of each solution that were required to precipitate 10 grains of pure tannin; and this then taken as the standard—instead of the amount of gelatin employed in making the solution. In determining the amount of tannin in the following substances, 100 grains were treated by the above process three successive times, and the average of the three results taken as the amount of tannin that each sample of the substance contains. The determination effected in the way above described produced results as follows:

	Per cent.
Alum root (<i>Heuchera americana</i>), 1st sample,	20.40
“ “ “ “ 2d “	18.50
Blackberry root (<i>Rubus villosus</i>),	9.75
Trailing arbutus (<i>Epigæa repens</i>),	3.50
Kino (<i>Pterocarpus marsupium</i>), 1st sample,	57.61
“ “ “ “ 2d “	39.18
Green tea (<i>Thea viridis</i>),	16.75
Black “ (<i>Thea Bohea</i>),	13.25
Dogwood bark (<i>Cornus Florida</i>),	3.00
Yarrow (<i>Achillea millefolium</i>),	4.15
Hemlock spruce bark (<i>Abies Canadensis</i>),	7.13
Witchhazel bark (<i>Hamamelis Virginiana</i>),	8.10
Marsh rosemary (<i>Statice caroliniana</i>), 1st sample,	18.06
“ “ “ “ 2d “	14.43
Rhatany (<i>Krameria triandra</i>),	22.79
Red rose (<i>Rosa Gallica</i>),	5.49
Bistort (<i>Polygonum bistorta</i>),	21.00
Best galls (ex <i>Quercus infectoria</i>),	80.07
White galls, inferior (ex <i>Quercus infectoria</i>),	30.72
Good commercial powd. galls (ex <i>Quercus infectoria</i>),	52.39
Common agrimony (<i>Agrimonia eupatoria</i>),	4.75
American alder (<i>Alnus serrulata</i>) bark,	4.00
American alder (<i>Alnus serrulata</i>), aments,	1.50
Black birch (<i>Betula lenta</i>),	3.30
Catechu, No. 1,	49.40
“ “ 2,	40.20
“ “ 3,	32.80

	Per cent.
Oak bark, young (<i>Quercus alba</i>)	11·21
“ “ ordinary, “ “	6·34
New Jersey tea (<i>Ceanothus americanus</i>),	9·21
<i>Uva ursi</i> (<i>Arctostaphylos Uva ursi</i>), 1st sample,	6·11
“ “ “ “ 2d “	6·33
<i>Comptonia asplenifolia</i> (folia),	8·20
<i>Pipsissewa</i> (<i>Chimaphila umbellata</i>),	4·15
<i>Cranes bill</i> (<i>Geranium maculatum</i>), 1st sample,	13·41
“ “ “ “ 2d “	17·25
Sumach bark (<i>Rhus glabrum</i>), 1st sample,	8·75
“ “ “ “ 2d “	14·55
“ berries, “ “	1·90
<i>Tormentil root</i> (<i>Tormentilla erecta</i>), 1st sample,	30·90
“ “ “ “ 2d “	23·46
Hops (<i>Humulus lupulus</i>),	3·67
Pomegranate rind (<i>Punica granatum</i>),	23·83
Bark pomegranate root, “ “	2·94

EXTRACTUM PEPO FLUIDUM—FLUID EXTRACT OF PUMPKIN SEED.

BY CHAS. HAND.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

Take of Pumpkin Seed sixteen troyounces; alcohol, sp. gr. ·835, a sufficient quantity. Bruise the seed with an equal bulk of washed sand, until they are thoroughly comminuted; transfer to a conical percolator; pour upon it the menstruum until three pints have passed, reserving the first twelve fluidounces, and reduce the remainder to four fluidounces by distillation; mix this with the reserved tincture and filter.*

Having been called upon to prepare a fluid extract of Pumpkin Seed for Dr. Cullen, of Camden, N. J., I proceeded in accordance with the process given in the formula, and the results were so satisfactory in all respects, that I thought it worthy as the subject of my thesis.

* *Note*.—Granting the statement of the author, that alcohol of ·835 is the proper menstruum, it is highly probable that the preparation would be better adapted as a vermifuge if it was less alcoholic and partly saccharine which could easily be effected by partial evaporation of the reserve fluid to eight fluidounces and the introduction of four fluidounces of syrup.—*Editor Amer. Jour. Pharm.*

It has proved, in the hands of the above physician, a valuable remedy for "tænia solium," and he regards it as an indispensable addition to the list of new remedial agents. Having given it in the dose of a tablespoonful three times a day for a short period, its action was such as to destroy nearly the whole of the worm, and by continued use it was completely eradicated.

The above is sufficient evidence of its efficacy to admit it as a remedial agent.

Pumpkin Seed have, for a length of time, been known and valued as a medicine for tapeworm, and recent uses of it, more especially in the form of a fluid extract, have established its reputation above other well-known remedies, and indeed in cases where male fern, pomegranate and kamela have not been uniformly efficacious.

No preparations of Pumpkin Seed have been offered which afforded convenience and reliability, being usually administered in the form of an emulsion; and this indeed has operated very much against its general use, and deprived us of an indigenous remedy of great importance. A thought suggested itself to my mind that the above menstruum was applicable to extract the active principle, being a general solvent for proximate principles, in their native combination, and affords a preparation of permanency.

I determined that the fixed oil which the seed contains was not soluble in alcohol; and believed that it contained no efficacy of itself, though it is reputed to be the active principle. It is true it may hold in solution the active principle, whatever it may be. But these experiments demonstrate the fact that it does not depend upon the oil, as the menstruum does not dissolve it.

I exhausted the seed of their oil by means of ether, and from one thousand grains obtained three hundred grains of fixed oil, affording the unusual large amount of nearly thirty-three per cent. Its sp. g. is .94; it is of a pale green color, which, on being heated gently, to expell the adhering ether, my attention was called to the brown color which it assumed; and on resting for a few days, it regained its original color. It afforded no striking reactions with the mineral acids. Its taste is somewhat sweet and nut-like. It does not readily become dry, therefore

does not belong to the class of drying oils. Its odor is analogous to that of olive oil; and it is not soluble to the extent of a trace in alcohol; but is soluble in all proportions in chloroform.

A quantity of seed were placed in a matrass, connected with a suitable condensing apparatus, and subjected to distillation. The distillate was carefully examined and found to contain no traces of volatile oil; neither did the distillate present any acid reaction upon litmus. The presence of an acid was detected in the seed, but afforded such a slight reaction as to warrant the belief that it is not the active principle.

I have found as the other constituents, gum, sugar, starch and chlorophyll. My desire has been to present something of utility, rather than any attempt of chemical research. But it is my further desire to discover the active principle, and present it in an isolated form, which task is reserved until a future opportunity presents itself.

PHARMACEUTICAL STILL.

By CHARLES O. CURTMAN, M. D., Professor of Chemistry in the Missouri Medical College.*

The recovery of alcohol and ether, used as a solvent in the preparation of extracts, etc., is of considerable importance to the manufacturer at any time, and, at present prices, amounts to a necessity. Much of the success of the operation depends upon the form and convenience of the distilling apparatus used for that purpose; and the want of a simple still, cheap and easily managed, adapted to the use of both the retail druggist and the country practitioner, has, in many instances, prevented them from preparing their own extracts and other medicaments requiring distillation, and has prompted them to purchase those articles from large manufacturers, some of whom are not always over scrupulous about the purity of their productions. Much has been accomplished in the construction of a still, at once cheap and simple, and easily manipulated, by Prof Procter, of

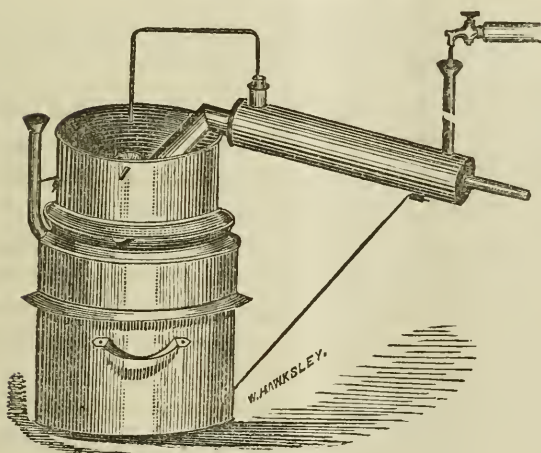
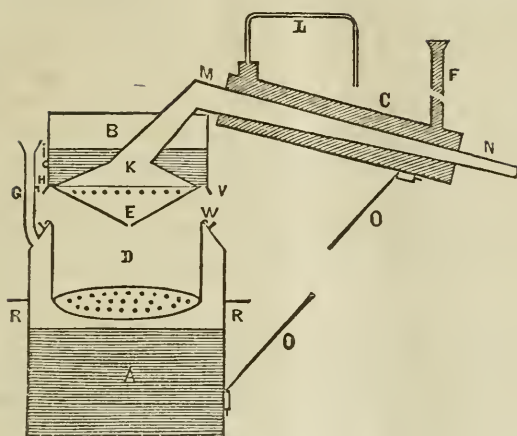
* Communicated by the Author—from proof-sheet of the St. Louis Medical Recorder for March, 1869.

Philadelphia, whose excellent apparatus deserves a much wider distribution than it has yet obtained.

The below described still is intended still more fully to meet the wants of those manufacturing on a small scale for their own use, and permits of a variety of applications not attainable by other modifications.

It consists of a vessel (a), the cucurbit, or boiler, serving as the receptacle of the liquid to be distilled; on top this carries a groove (w) for holding a small quantity of water, into which the prolonged rim (v) of the capital (b) fits loosely, forming a water-joint.* Within this vessel (a) may be suspended a perforated, shallow pan (d) (the diaphragm) for the reception of herbaceous or other substances, through which the vapor generated in (a) is to be passed, as is required in the manufacture of essences, spirits, distilled medicated waters, etc. The capital consists of a pan (b) with double bottom (k) (e), the lower one of which (e) is along the margin perforated by a row of holes, whose object is to spread the ascending vapor, so as to pass close to the sides of (k) the upper one of the double bottoms, where it is partially refrigerated, and the condensed liquid flows back to (a) through a hole in the centre and lower portion of (e). From (k) the exit tube passes out to (m) (n), being between those points enclosed in a cylindrical tube, which by means of the funnel tube (f) may be supplied with cold water, and which by the tube (l), discharges its heated water, forming in that portion of the apparatus a complete Liebig's condenser. The funnel tube (f) should be at least one inch higher than the discharge tube (l). The discharge tube (l) is moveable in its socket, and may be turned round so as to supply either the basin (b) with warm water, or to discharge outside. The tube (g) serves for pouring liquid into (a) without removing the capital, and carries a hook (h) which fastens into the loop (i), thus giving, together with the brace (o), firmness to the apparatus. The flat rim (r) is intended as a support by which the still may be suspended in a water bath, for which purpose a cast-iron

* This is to be commonly filled with water; but when strong alcohol or ether is distilled, it should be filled with flour-paste, and may be wrapped with a narrow strip of muslin in addition.—*Note by the Author.*



stove-pot, or any other vessel of suitable dimensions will answer. The still may be very cheaply made from tin-plate, or more durably from tinned copper. Care should be taken to turn the solder-joint of the tube (m) (n) upward.

In this apparatus the combination of a Liebig's condenser with a partial refrigerator enables the operator to separate strong alcohol at once from dilute tinctures, or alcohol from ether, by the mere regulation of the temperature of the water in the vessel (b), which, when maintained just above the boiling

point of alcohol, will condense only the aqueous part of the mixed vapor arising from (a), while it permits the strong alcoholic vapor to pass on to the condenser (c), there to be converted into concentrated alcohol. In case of ether distillations the temperature of the water in the pan (b) must slightly exceed the temperature of boiling ether, when ether vapor will pass on, while alcohol or water will be returned to the boiler (a). If water is to be distilled, the pan (b) is left empty, and the whole of the ascending vapor is condensed in the Liebig's condenser (c).

The still may be varied in size, from a few quarts up to many gallons, according to the views and requirements of the practitioner or druggist, and will amply repay them for their small outlay in its purchase.

ON THE LEAVES OF *PODOPHYLLUM PELTATUM*.

BY THOMAS J. HUSBAND, JR.

(An Inaugural Essay presented to the Philadelphia College of Pharmacy.)

The leaves of *Podophyllum peltatum* are palmate, with six or seven wedge-shaped lobes, irregularly incised at the extremity, yellowish green on their upper surface, paler and slightly pubescent beneath, and from four to six inches in width. They attain their growth by about the first of June, at which time the plant flowers. Soon after this period they become covered with bright yellow spots, which increase in size until the leaves decay, which occurs about the end of July.

The rhizome of this plant has been the subject of several essays, but I believe the leaves have received very little attention, although poisonous properties have been ascribed to them.

It was suggested that the leaves might contain a resin similar to the podophyllin of the rhizome, and the following experiments were made with the view of ascertaining whether this was the case.

The leaves were collected during the time of flowering, dried in the shade without artificial heat, and reduced to the "moderately fine" powder of the U. S. Pharmacopœia, (No. 50). A portion of this powder was moistened with alcohol, packed in a

cylindrical percolator and exhausted with that menstruum. The resulting tincture was of a dark olive color and slight bitter taste.

This was evaporated in a water bath to the consistence of thin syrup, and while hot thrown upon six times its measure of cold water, being stirred during the process until the liquids were thoroughly mixed.

A quantity of resin was thus separated which was of a drab color and decided bitter taste, but which was very difficult to remove from the mixture.

After standing for twenty-four hours, only a small quantity of resin was obtained, although filtered first through cotton flannel, and then through paper, the greater portion remaining suspended in the water, from which it could not be separated, even by repeated filtration. The "American Journal of Pharmacy," (Vol. xxxv, page 303,) contains an article by Professor John M. Maish, in which it is stated that in the process for obtaining the officinal *Resina Podophylli*, the deposition of the resin from the aqueous mixture is greatly facilitated by the addition of muriatic acid, the result being mainly attributable to the formation of the insoluble muriate of berberina, which alkaloid is contained in the precipitated resin.

The mixture containing the suspended resin was therefore acidulated with muriatic acid and the resin immediately separated, leaving the liquid transparent, and of a bright yellow color. By repeated washing with cold water the bitterness was entirely removed from the resin, which was very much darkened during the process, being almost black when thoroughly washed.

To ascertain whether this resin was similar to podophyllin, it was subjected to the several tests for that substance, and was found to agree with it in every particular.

It consisted of two resins, one soluble in ether and alcohol, the other in alcohol, and both in caustic alkalies and chloroform.

When the ethereal resin was dissolved in caustic alkali it was precipitated by acids, but in an alkaline solution of the alcoholic resin no change was produced by the addition of acids.

Much the largest portion was dissolved by ether, and the residue, which was nearly destitute of taste, soon became hard,

while the ethereal portion had the soft consistence of an oleo-resin and remained so, all efforts to dry it being unsuccessful.

Dissolved in alcohol and boiled with purified animal charcoal, the resin was obtained of a light brownish-yellow color and a slight bitter and very disagreeable taste.

This purified resin was taken in doses as large as eight grains, without producing any other effect than slight headache.

A portion of the tincture of the leaves, after concentration, was mixed with boiling water and boiled for ten minutes; the resin was then obtained in very dark masses and entirely free from bitterness, while the liquid had a dark orange brown color, an extremely permanent bitter taste and an acid reaction.

This was concentrated to about one half, and when cold acidulated with muriatic acid, evaporated to dryness and treated with boiling alcohol.

On cooling, the alcoholic solution deposited a quantity of what appeared to be yellow powder, but which had a grittiness when rubbed between the fingers, and when examined with a magnifying glass was found to consist of small yellow crystals.

These crystals were again dissolved in boiling alcohol and were obtained with less color. They were nearly insoluble in cold alcohol and water, freely soluble in both liquids when boiling, and their solution was darkened by ammonia, thus presenting characteristics similar to muriate of berberina.

From the preceding experiments it appears that there exists in the leaves of May-apple a resinous substance, similar in its chemical relations to podophyllin, but without its cathartic properties, and that the bitterness is caused by the presence of berberina.

It would also seem that no poisonous properties exist in the dried leaves.

CRYSTALLIZED NITRATE OF MERCURY IN PHARMACY.

BY HAMILTON HUTCHISON.

The author in an inaugural essay states that this salt has been prescribed considerably of late, by Dr. John Neill, of Philadelphia, in solution in glycerin as a substitute for citrine oint-

ment, which is an unsatisfactory preparation, requires a great deal of attention, and is also tedious and troublesome to make, besides changing in color and consistence.

Crystallized nitrate of mercury is prepared by placing four hundred grains of mercury in a small capsule and pouring on it three hundred grains of pure nitric acid (sp. gr. 1.42). The mixture should be stirred occasionally with a glass rod until nearly all the mercury is dissolved, when the rod should be removed and the vessel and solution allowed to stand until cold. Clear crystals will soon appear in the form of plates overlapping each other. About five hundred and sixty grains of the dried salt is obtained, and about ten grains of mercury remains undissolved.

Crystallized nitrate of mercury is soluble in glycerin, slightly soluble in alcohol, ether and acetic acid. Theoretically three hundred and forty-four grains of citrine ointment is equivalent to forty-three grains of crystallized nitrate of mercury. As the salt is quite soluble in glycerin the best manner of using it as a substitute for citrine ointment would be to dissolve forty-three grains in five drachms of glycerin, which is equivalent in proportion to that ointment. (But probably in practice, owing to the soluble condition of the mercurial salt, it would be found much more active.) Dr. Neill has used it in the proportion of twenty grains in a fluidounce of glycerin, which answered his purposes better than citrine ointment. The crystals made with chemically pure nitric acid (sp. gr. 1.42) become dry and hard and will keep for a long time, while those that are prepared with common aquafortis become deliquescent. The salt should be kept in a glass stoppered bottle.

NOTE RELATIVE TO THE EFFECTS OF ATROPIA.

BY DR. S. R. PERCY.

[In quoting Dr. Percy's statement relative to the use of atropia for toothache we appear to have conveyed a wrong impression in reference to its tendency to accumulative effects when administered at intervals. The following note will set the matter right.—ED. AM. JOUR. PHARM.]

To the Editor of the Am. Jour. Pharmacy.

Dear Sir.—In the March number of your excellent Journal, p. 127, you profess to quote me, saying, "He considers atropia cumulative in its action." For twenty-five years I have taught the folly of this bug-bear—*cumulative action*. I have never once seen this effect, nor can I find an individual who has. Let me quote in full what I did say. "The effects of atropia remain longer in the system than any medicine of its class. If we compare it with the narcotics we find that they are all eliminated from the system in a quicker time than atropia. If we compare it with the sedatives we find the same result. Medicinal doses of atropia of $\frac{1}{20}$ of a grain will produce effects that will not subside in less than twenty-four hours, and frequently they last for double that time. Caution, therefore, need be used in administering this remedy, and doses must not be repeated too often, otherwise the system may be overwhelmed by the accumulated influence of one dose given before the effects of previous doses have sufficiently passed over." In my monograph on digitalin, p. 35, this subject of cumulative action is discussed, and Dr. A. Fleming, in Ed. Med. Jour., 1862, has written a very able and lucid paper on this subject.

It hardly looks well that you make me say one thing in your journal when I have for years taught the contrary.

Yours respectfully,
S. R. Percy.

GLEANINGS FROM FOREIGN JOURNALS.

BY THE EDITOR.

On the emulsion of medicinal oils.—M. Nougaret, of Bordeaux, (Jour. de Pharm., Jan., 1869,) proposes to emulsionize oils in the following manner: Take a perfectly dry bottle; introduce a troy ounce of castor oil, for example, and 75 grains of pulverized gum arabic, and agitate them until the powder is mixed with the oil; then add a troy ounce of orgeat syrup and three drachms of water. Agitate again with the addition of small quantities of the vehicle. In about five minutes the emulsion is complete. The success is constant when care is taken, first, to envelope the gum

particles completely in the oil, and then to add the aqueous vehicle little by little, with a rapid agitation. M. Nougaret finds this plan equally applicable to fixed oils and oleoresins.

[This plan of M. Nougaret is novel only in avoiding the use of a mortar. We, and doubtless many others here in the United States, often proceed as follows: Add one part of gum to two or three parts oil in a mortar; triturate till the mixture is complete, and then add at once twice as much water as of gum used and triturate rapidly until the oil is completely emulsionized; then *gradually* add the remainder of the vehicle with constant trituration. This method may be followed either with or without the addition of sugar, and is especially applicable to oil of turpentine, copaiba, oleoresin of cubeb and to all the emulsionizable oils and oleoresins.—W. P., Jr.]

Simple process for detecting Strychnia.—M. Schachtrupp, (Zeits. Analyt. Chem., p. 284, 1868, and *Jour. de Pharm.*) This process consists in saturating the suspected substance with ammonia, and allow it to dry spontaneously; then heat it with a little amylic alcohol, after which add a few drops of this liquid to sulphuric acid and bichromate of potassa, when, if strychnia was present in the substance, the well-known coloration characteristic of that alkaloid will be obtained.

Synthesis of Coumarin.—Mr. Perkins (of England) has succeeded in obtaining coumarin by a synthetical operation analogous to that which M. Cahours employed to obtain aceto-salicylic $C_{18}H_8O_6$, an isomere of coumaric acid. Acetic anhydride is treated by salicylide of sodium; the mixture becomes hot, is then heated to boiling and poured into water; when an oily body separates, which on distillation gives off acetic acid and hyduret of salicyl, and finally, at 554° F., coumarin in crystalline mass, which, after pressure in paper and recrystallization from alcohol, is obtained identical with the coumarin of Tonka beans.

On substituting butyric and valeric anhydrides for the acetic anhydride in this process, Mr. Perkins obtained other coumarins distinct from the normal, and which he considers as members of a series consisting of acetic, propionic, butyric and valeric coumarins.—*Jour. de Phar.*, Jan., 1869.

Assay of Glycerin.—According to M. Hager (Jour. de Pharm., Jan., 1869,) when glycerin is falsified with sugar or dextrine it may be detected as follows: Dilute it with water, add molybdate of ammonia and some drops of nitric acid and boil. In case these impurities are present the liquid colors blue; if pure it continues colorless. The proportions employed are as follows: Glycerin 5 drops, distilled water 100 to 120 drops, molybdate of ammonia 3 to 4 centigrammes, pure nitric acid one drop; boil for about two minutes.

New use of Mica.—M. Puscher has lately called the attention of the Industrial Society of Nuremberg to the Siberian mica, which is found abundantly in very fine tables, and which so far has only been employed for window-lights and lanterns, and to make the cylinders for petroleum oil lamps, and suggests various new uses of it.

If after reducing it to thin laminæ to be cleansed with sulphuric acid it may be silvered like glass, and its flexibility enables it to be used on curved surfaces for ornament, or as reflectors. When such plates are heated to a certain degree in muffles they assume an unpolished silver surface, and may be wrought into a variety of ornaments. When coarsely powdered and dusted on surfaces marked in figures with moist gelatin, a very brilliant effect is produced.—*Jour. de Pharmacie, from Cosmos.*

Presence of gum in Wine.—M. Pasteur has recognized the presence in all wines, in variable proportions, but always very sensible, of a substance combined with phosphate of lime and having all the general properties of gum, especially that of yielding mucic acid in quantity by the action of nitric acid, identical with that from arabin. It may be separated from the wine by evaporating to one-fifteenth its bulk, allowing the salts to crystallize during 24 hours, decanting the syrupy mother-water and precipitating the gum by four times its bulk of alcohol. It should be collected on a filter, washed with alcohol, redissolved in water and reprecipitated.

On an impurity in commercial Chloroform.—M. Personne, of the Hospital of Mercy, has made known the nature of the alteration, stated by M. Stader in 1867, in the chloroform of commerce ex-

posed to air and light for a certain time. This chloroform becomes acid and emits white irritant vapors which consist almost wholly of chlor-oxycarbonic acid.

According to M. Personne this acid is not formed at the expense of the chloroform itself, but of chlor-oxycarbonic ether, which it fortuitously contains.

This ether boils at 93° F., whilst pure chloroform boils at 140°. When such impure chloroform is shaken with caustic potassa this ether is destroyed; the point of ebullition is steady at 140° F. and the chloroform becomes permanent. It is therefore essential to rectify such chloroform from caustic potassa before using it for surgical purposes.—*Jour. de Chim. Méd.*, Jan., 1869.

Chemical composition of Canaüba Wax.—A paper on this subject by N. S. Maskelyue, M. A., was read before the Chemical Society Jan. 21st. This wax is produced by a palm, the *Copernicia cerifera*, known to the Brazilians as the Canaüba tree. The glaucous coating of the younger leaves contains the wax, each leaf affording about 50 grains. It is collected and melted into a mass of a greenish-yellow color.

Its specific gravity is 0.99907, its melting point 183° Fahr. and it yields 0.14 p. ct. of ash. The crude wax was saponified by boiling it with an alcoholic solution of potassa containing one-sixth of alkali, until clear, the alcohol distilled off and the residue precipitated by neutral acetate of lead of a yellow color. The liquid portion was evaporated to dryness and extracted by ether, which removed the wax alcohols. By repeated crystallization from ether the melissin was obtained in a state of purity. Besides melissin and cerotin the author isolated another wax alcohol, fusing at 105°. The author's experiments did not satisfactorily determine all the constituents. (*Chem. News*, Jan. 29.)

Ammoniacal Extract of Valerian in Capsules, by M. Dannecy.—Under this name the author suggests a soft extract made from valerian by the agency of ammoniated alcohol. 100 parts of valerian in powder is placed in a percolator, and a mixture of 80 parts of alcohol of 60 per cent., and 20 parts of liquor ammonia (22°), poured upon it. When this has disappeared the percolation is continued with alcohol of 60 per cent. until a

weight of tincture is obtained equal to that of the valerian employed. This is evaporated with continual agitation at the temperature of 158° F. to the consistence of a soft extract, which is put in gelatin capsules, each containing about eight grains.

The author proposes, in this preparation, to exhibit a valerianate of ammonia in the condition in which it exists in the ammoniacal tincture of valerian, in a form not repugnant to the patient.—*Bull. de la Soc. de Bord. et Jour. de Pharm.*

Solubility of Phosphorus in Fixed Oils.—M. C. Méhu has observed that the solubility of phosphorus in fixed oils varies.

The oils of almonds, olives, poppies, sesamum and ground-nuts can retain one-eightieth of their weight of phosphorus at the ordinary temperature. The oils of almonds and ground-nuts will even retain a little more, but it is not prudent in practice to have them so near saturation.

The oils of colza, rape-seed, linseed, beach-nuts, sun-flower seed, brown cod-liver oil, and neats-foot oil, retain one-seventieth of their weight of phosphorus after eight days exposure in a cellar.

Castor oil differs much from these, as 105 parts of it are required to dissolve one part of phosphorus.

He has not observed much difference in the solvent power of boiled oils heated or those not superheated.

All the experiments have been made in vessels hermetically sealed, and repeated many times, and then allowed to remain in the cellar for eight days to acquire a medium temperature.—*Jour. de Pharm.*

Burgundy Pitch and Caoutchouc Plaster.—M. Lorigne, of Bordeaux, suggests the combination of 35 parts of caoutchouc cut in thin pieces and reduced to a semifluid consistence by aid of 13 parts of petroleum oil in a close vessel, with 300 parts of Burgundy pitch and 25 parts of white wax, previously melted. It is found most practical to add the melted pitch and wax in small quantities at a time to the caoutchouc solution in a basin and agitate rapidly until the mixture is homogeneous, and when all is thus added about 3 parts of glycerin is stirred in to a perfect mixture.—*Jour. de Pharm., Feb., 1869.*

NOTE ON VIRGINIA OPIUM.

BY THE EDITOR.

About the middle of February a note from Mr. William A. Strother, of Lynchburg, Virginia, informed us that he had sent by express a vial of Tincture of Opium, made from opium raised in that vicinity in 1864, and further that he had no more of the opium left, the residue having been given to Mr. Gellatly of N. Y., in June, 1865.

The "Laudanum," made before that time, consisted of half an ounce av. of the opium to eight fluid-ounces of diluted alcohol. Of this about five fluid-ounces were sent, each fluid-ounce representing 27·39 grains of the opium.

Mr. Strother desired to know how it compared with laudanum from Turkey opium, as persons in Virginia were inclined to give attention to opium culture, believing the climate and soil well suited.

In a second note on the subject, Mr. Strother enclosed a letter received from Mr. Powhatan Robertson, who had raised the poppies and prepared the opium from which the laudanum sent was made.

By a comparison of names, dates, etc., it was at once seen that this gentleman, Mr. Robertson, was the same noticed in Prof. I. J. Grahame's article on American Opium, in the Proceedings of the Association, for 1866, and copied into this Journal, (vol. xxxix, p. 50, 1867,) and consequently that the opium of the tincture sent to me by Mr. Strother was from the same source with that examined by Prof. Grahame. The process adopted by Prof. Grahame in the assay (The U. S. Pharm. process for morphia,) not being suited to this purpose so well as Mohr's, it was determined to make a new assay.

Two fluid-ounces of the laudanum, representing 54·75 grains, was evaporated to free it from alcohol, diluted to three fluid-ounces, strained and boiled with milk of lime from an equal weight of lime for fifteen minutes, filtered, lixiviated with hot water, acidulated with hydrochloric acid, evaporated to half a fluid-ounce, neutralized with ammonia, filtered, and an excess of ammonia added and allowed to stand thirty-six hours.

The crystalline precipitate, which was impure and much colored, was washed with diluted alcohol, and afterwards with ether. The residue, weighing 5 grains, was morphia, still considerably colored, giving well marked reactions with nitric acid and sesquichloride of iron. The yield was equivalent to 9.15 per cent. From the manner in which this opium had been made, being all inspissated juice, it was believed that its actual strength should be greater than was indicated in the process tried by Prof. Grahame; and assuming the sample of laudanum to have been made according to the proportions given by Mr. Strother, it will appear that this opium is equal to fair Turkey Opium in strength.

As there is much interest at this time relative to the culture of the poppy, it may be well to copy a portion of Mr. Robertson's note to Mr. Strother, which is dated March 8th, 1869:

"I have received your letter inquiring about the cultivation of the poppy, and the manner of making opium, and regret that I can give so little information on the subject. My experience was very limited, having only cultivated the poppy in a garden on *very rich soil*, where the yield of opium was very great; but I neither measured the land nor weighed the opium. I am satisfied that a deep rich soil is essential to a large yield; the poppy has a long tap root, which enables it to stand severe drouth, provided the tap root can penetrate the soil to a sufficient depth. Alluvial soils I doubt not are best. The young plant is very tender, of slow growth and cannot be successfully transplanted. The seed should be put in drills about three feet wide, the plants standing from one foot to eighteen inches apart, or even more, as it is a very vigorous grower. The last of July or early in August is a good time to sow the seed, as the plants stand the winter without injury.* The single poppy I found to yield more opium than the double, and there is less trouble in obtaining it from the capsules. The single white poppy, or rather the poppy with white seeds, is generally considered the true opium plant. When the capsules are about half grown, or three or four days after the flower has dropped, is the proper time to make several longitudinal incisions on the capsule, taking care not to cut through the capsule so as to injure the seed. The incisions should be made during the evening, and the thickened juice which exudes during the night scraped off the next morning with a dull knife. When it becomes sufficiently dried it can be put up in any shape or size that is desired." * * *

* This was in the Valley of the Shenandoah, Va. It is possible that further north the plant may not be able to resist the winter.—*Editor*.

ON UNGUENTUM HYDRARGYRI NITRATIS.

By THOMAS JEFFERSON COVELL.

(An Inaugural Essay presented to the College of Pharmacy of the City of New York.)

The writer, in endeavoring to produce a proper article of ointment of nitrate of mercury, has reviewed quite all that has been published for the past eighty-nine years, in fifty-five Pharmacopœias and Dispensatories of Continental Europe, Great Britain, and the United States of America, upon the subject, and does herewith present a synopsis in tabular form.

The table shows at a glance the ingredients and quantities, or parts by weight, and each formula is numbered, to facilitate reference as to where that formula is contained, there being nineteen variations of the fifty-six works referred to.

Thirty-one of the Pharmacopœias use lard, twenty-three lard and olive oil, and three lard and neats-foot oil, as a vehicle. The proportion of mercury contained in the various ointments varies from 8.3 per cent. to 5.25 per cent., the average being 6.45 per cent.

The nitric acid, although calculated to a standard of sp. gr. 1.42, has undergone the greatest and most notable change; starting with equal parts of mercury and nitric acid, the table ends with four of mercury to seventeen of nitric acid (1:4.25).

In most Pharmacopœias there are no precise-directions for the manipulation, in which lies quite all the requirements for success; and for that reason the synopsis will be followed by some detail of the writer's experience, as practical as possible.

Synopsis of Unguentum Hydrargyri Nitratis.

	§1	§2	§3	§4	§5	§6	§7	§8	§9	§10
Hydrargyrum.....	2	3	1	1	1	1	1	1	2	1
Acidum nitricum,	2.5	4	1	2	1	2	2	2.5	3	2.5
Oleum olivæ.....	0	0	4	0	0	12	9	0	0	0
Adeps.....	24	32	8	12	10	4	3	8	31	15

	§11	§12	§13	§14	§15	§16	§17	§18	§19	§20
Hydrargyrum.....	1	2	4	2	2	2	3	4	4	3
Acidum nitricum,	2	3	13	3	5	6	7	12	17	8
Oleum olivæ.....	4	16	30	16	0	8	0	30	30	0
Adeps.....	6	16	15	8	6	12	9	15	15	9
Oleum bubulum..	0	0	0	0	18	0	24	0	0	24

‡1.—Pharmacopœa Genevensis, Genev., 1780. Pharmacopœa Generale, Taddei Firenze, 1826. Pharmacopœa Taurinensis, etc., Taurini, 1833. Pharmacopœa teoricopratica, Del-Buc, Piacenza, 1835–36.

‡2.—Pharmacopœa Generalis, Spielman, Argentor, 1783. Pharmacopœa Manualis, Anvers, 1812.

‡3.—Pharmacopœa Syphilitica, Von Swediaur, Paris, 1799. Pharmacopœa in usum studiosorum, Saunders, Leips., 1790.

‡4.—Dispensatorium Fuldense, Francofurti, M. Ed. 3tia, 1791. Dispensatorium Lippiacum, genis moderno, 2 vol., Lemgoæ, 1792–94. Pharmacopœa Amstelodamensis nova, Amstelodami, 1792. Pharmacopœa Oldenburgica, Oldenburg, 1801. Pharmacopœa Danica, Hafniæ, 1803. Pharmacopœa pauperum in usum instituti clinici, Hamburg, 1804. Pharmacia rationalis, Piderit, Marburg, 1806. Pharmacopœe generale, Brugnatelli, Paris, 1811. Pharmacopœa Succia, Stockholm, 1817. Pharmacopœa Fennica, Aboæ, 1819. Pharmacopœa Hannoverana, Hannov., 1819. Pharmacopœa Austriaca, Viudobonæ, 1820. Pharmacopœa Lusitanica, Ed. Pinto. Lissat, 1825. Pharmacopœa Electoralis, Cassellis, 1827. Pharmacopœa Borussica, Ed. 5tia, Berolini, 1829. Pharmacopœa Hannoverana, nova ed., Hannov., 1833. Codex Medicamentaris Hamburgensis, Hamburgi, 1835. Pharmacopœa Saxonia, Ed. 2da, Dresden, 1837. Pharmacopœa Badensis, Heidelberg, 1841. Pharmacopœa Græca. ed. Boaros Landerer et Sartori, Athens, 1837.

‡5.—Pharmacopœa Hispanica, ed. 3tia, Matriti, 1803.

‡6.—Pharmacopœa Dublinensis, Dublin, 1807. Pharmacopœa medici practici universalis Swediaur, ed. Van Mons, Bruxelles, 1817. Pharmacopœa, Supplement to London, Rennie, London, 1829. Pharmacopœa, Supplement to London, Gray, London, 1831.

‡7.—Pharmacopœa Castrensis, Ruthena auct. Whyllie, Petropol., 1808. Pharmacopœa Edinburgens, Edinburg, 1812. Pharmacopœa Danica, nova ed. Hafniæ, 1840. Pharmacopœia U. S. America, Boston, 1820. American Dispensatory, Coxe, Philada., 1825–27. Supplement to Pharmacopœias of London, Rennie, London, 1829. Supplement to Pharmacopœias of London, Gray, London, 1831.

‡8.—Farmacopea Ferranni, Bologna, 1825. Farmacopea Ferrarese, ed. 10ma, Padova, 1825.

‡9.—Pharmacopœa Gallica, Paris, 1818.

‡10.—Pharmacopœa usuelle, theorique et pratique, Van Mons, Lourain, 1821.

‡11.—Pharmacopœia U. S. A., 1830. Pharmacopœia London, trans. of by Cox and Gregory, London, 1835. Pharmacopœia Londonensis cum trans. Phillipsi, London, 1837.

‡12.—Codex Ph. Francaise. redigee par ordre, Paris, 1837. Pharmacopœia nosocomiorum civil, Argentinendum Argentor, 1840.

‡13.—Pharmacopœia Edinburgens, Edinburg, 1841.

‡14.—Pharmacopœia Dublinensis, Dublin, 1850.

§15.—Pharmacopœia U. S. America, 1840. Pharmacopœia U. S. America, 1850.

§16.—Pharmacopœia London, 1851.

§17.—Pharmacopœia U. S. America, 1860.

§18.—Pharmacopœia British, London, 1864.

§19.—Pharmacopœia British, London, 1867.

§20.—Process in use by the writer, Thos. J. Covell, since 1863, and detailed in experiment §4.

Only two of the nineteen formulas were selected for experiment, the first being that of the British Pharmacopœia, 1867, and the second that of the United States Pharmacopœia, 1860.

The formula of the British Pharmacopœia is §19 of the table, and the directions are thus given:

Dissolve the mercury in the nitric acid with the aid of a gentle heat (query, what temperature?); melt the lard in the oil by a steam or water bath, in a porcelain vessel capable of holding six times the quantity; and while the mixture is hot (what temp.?) add the solution of mercury (query, all at once, or gradually?), also hot (what temp.?), mixing them thoroughly.

If the mixture does not froth up, increase the heat till this occurs. Keep it stirred until cold.

Experiment §1.—The quantities of Br. Ph., §19, were taken. The mercury was allowed to dissolve by the aid of the heat, generated by the reaction, about 125° F.

The lard and oil were heated to 200° F., when the solution of mercury, 125° F., was gradually added, in portions of fl.℥ii, at intervals of two to five minutes, that the reaction might not be too violent, and easily controlled. The temperature, after the first addition, rose rapidly to 230° F.; after the second it fell to 226°; and after each succeeding addition of the mercurial solution fell to 219°, 216°, 214°, then rose to 220°, then fell to 218°, 200°, 190°, at which it remained until the reaction had apparently ceased. It was constantly stirred throughout the entire process. (Loss in weight 13·63 per cent.)

Experiment §3.—The quantities of the U. S. Pharm., §17, were taken, the directions of which are as follows:

Dissolve the mercury in the acid (hot or cold?); then heat together the oil and lard in an earthen vessel (how long?) and,

when the temperature reaches 200° F., remove the mixture from the fire.

To this add the mercurial solution (hot or cold?), and, with a wooden spatula, stir constantly so long as effervescence continues, and afterwards occasionally until the ointment stiffens.

The mercurial solution was added all at once to the melted oil and lard, temp. 200° F. The temperature fell to 160°, then rapidly rose to 260°, the ointment undergoing a violent reaction, and assuming quite a dark brown color. The temperature gradually fell to 220°, at which temperature the reaction gradually ceased. (Loss of weight 7 per cent.)

Experiment §4.—This was one-eighth part of a formula which has been used by the writer for several years,—in fact is the result of experiments made with the official formula during the autumn of 1863, and is here given :

Take of Mercury, 12 oz.

Nitric Acid, sp. gr. 1.42, 32 oz.

Lard (pressed), 36 oz.

Neats-foot Oil, 96 oz.

All by weight.

Put the mercury into a three-pint flask, and add thereto 28 oz. of the nitric acid; let it remain at the ordinary temperature until all of the mercury is dissolved, and the resulting solution is of a beautiful green color.

Place the oil and lard in a suitable earthen vessel, of at least four gallons capacity, and gradually heat the mixture to 180° F.

Now warm the mercurial solution to 160° F., and gradually add it to the oil and lard, at the above named temperatures, in portions of fl.ʒii at a time, constantly stirring with a glass or porcelain stirrer; the temperature gradually rises to 190°, 200°, 220°, 230°, above which last degree it must not be allowed to rise. The stirring must be continued so long as effervescence continues; and when it ceases, and the ointment has cooled to 200° F., add the remaining 4 oz. of nitric acid, and stir occasionally until cool. (Loss 10 per cent.)

The result of the above formula is shown by sample marked §4.

Experiment §5.—The quantities of the U. S. Pharm. 1860,

§17, were taken. The oil and lard were heated to 125° F., and the mercurial solution was also heated, after solution, to 125° , when it was poured into the oil and lard; the temperature gradually rose to 170° , 172° , at which temperature it remained until effervescence ceased. (Loss 2.3 per cent.)

In this last experiment the ointment was rapidly stirred upon the addition of the acid solution, and afterwards until it began to stiffen.

All of the samples appear in good condition; §1 has evolved some gas, and has been relieved of about one-eighth of the original contents. The remainder has been pronounced a good ointment by a competent gentleman.

§3 has not changed since made, and although not an elegant ointment, from containing many aggregations of particles of $(2(\text{Hg}_2\text{O})\text{NO}_3)$, the salt which, when the ointment is not heated too high, and in presence of a slight excess of nitric acid and finely divided, gives the beautiful lemon color.

In the foregoing detailed experiments the writer has gleaned the following facts: that heat, within certain range of degrees, and nitric acid of at least sp. gr. 1.42, in excess (although the Brit. Pharm. process shows too much acid), is required.

Without going further into the discussion of the chemistry of the subject, the writer begs leave to submit to the consideration of the College of Pharmacy of the City of New York this paper, and four samples of ointment of nitrate of mercury, prepared in accordance with the foregoing detail of experiments.

NOTE ON PYROPHOSPHATE OF IRON.

By ROBERT W. GARDNER.

PROF. PROCTER:

Dear Sir:—I notice a communication in the January No. Journal of Pharmacy, in answer to Query No. 26, in regard to Pyrophosphate of Iron.

I have made pyrophosphate of iron in considerable quantities, and found much difficulty at first in getting it to scale properly. After numerous trials I discovered *my* error—not the formula's. I did not fully sesquioxidize my solution of tersulphate of iron.

I used nitric acid in the quantity mentioned in the formula, but of deficient strength. Since then I have been very particular to continue the heat, and if necessary add a small extra quantity of acid nitric, (to be subsequently driven off by heat) until the solution tested with ferrid-cyanide of potassium fails to produce the characteristic blue, showing the presence of protoxide of iron.

I am of the opinion that the U. S. Formula will always produce a good article of pyrophosphate of iron, when proper attention is given to details.

Hoping these suggestions may prove of some service, I remain
yours respectfully,

ROBT. W. GARDNER.

Bergen, N. J., April 6th, 1869.

SULPHATE OF MANGANESE.

BY DR. C. J. RADEMAKER.

To the Editor of the Journal of Pharmacy.

Having occasion to prepare some sulphate of manganese, several formulas were resorted to, as heating binoxide of manganese with sulphuric acid, heating carbon sulphuric acid and binoxide of manganese, and Mr. Lester's process of hydrochloric acid and binoxide of manganese, and boiling the resulting solution with pure carbonate of manganese, all of which gave very impure products, with the exception that the solution was free from iron, but still contained copper, cobalt and nickel.

In order to prepare a pure salt the sulphate was decomposed with carbonate of soda, the carbonate of manganese redissolved in acetic acid, the solution of acetate treated with sulphuretted hydrogen; the solution filtered and decomposed with carbonate of soda, the resulting carbonate of manganese redissolved in pure sulphuric acid. The above process gave a perfectly pure salt. If copper only is present it is not necessary to convert the manganese into acetate, as copper is precipitated from sulphate.

Respectfully,

C. J. RADEMAKER, M. D.

Louisville, April 5, 1869.

VERMONT OPIUM AGAIN.

What has already been published in this Journal, in January and March, may be sufficient to exhibit the true character of this false opium ; but in order that other evidence beside our own may appear, of the details of Mr. Wilson's process as given by himself, we reprint an article which appeared in the semi-weekly *N. Y. Tribune* of March 5th, 1869. There are some points of the process and apparatus not before noted. It must be evident to every pharmacist that the result is a mixture of extract of poppy leaves and stalks, with a little true opium juice, very variable in composition and wholly unfit to replace the foreign drug except in very large doses.—EDITOR AMER. JOUR. PHARM.

HOME MADE OPIUM.—W. O. Wilson, of Uxbridge, Vt., addressed the club on the advantage of raising our own poppies. He has been engaged in opium growing for five years, and has derived great profit from it. He says a farmer can raise from 300 to 400 pounds per acre, worth in the drug stores from \$1,500 to \$3,500. In 1867 he planted three-eighths of an acre with poppies, and made 147 lbs. of opium, and sold it for \$9 a pound. Another year, from a space of ten paces by five, he took \$68 worth. He gives the following rules to guide those who wish to go into the poppy business :

I. Plant in rows 30 inches apart, and drop the seed 8 or 10 or 12 inches apart, from three to six seeds in a hill ; then do not cover more than an inch deep.

II. Then hoe them once before you weed them ; the second time hoe them—hoe them close as possible with a sharp-cornered hoe ; then weed the third time ; you will not want to weed the fourth time ; dress over ; you will need to watch a little for worms.

III. The next in order is to get ready to manufacture the crop into opium. Get your mill and press in good order, then get your vat to hold the pumice, have it lined with tin or brass ; then your plates to dry the milk on ; get your sifter to cleanse in, and your alcohol to prepare the milk to eat off the morphine (!) from the pumice. This will help, in drying, to prevent souring and to give the odor of foreign opium.

IV. When you commence cutting the plant, you will see there are some plants that are more forward than others ; sort them out and cut them first, just before the buds begin to ripen—you must not let them ripen ; the seeds want to be full grown ; keep sorting every day, until you get through, so as to have them uniform. The main thing to get the matter right is to put half a pint of alcohol to every fifty pounds of the pumice, then let it be stirred well together before pressing ; then set a

half hour; then press it. The alcohol will cut the morphine from the plant, then the extract will be perfect and in order; then the odor will be like foreign opium.

V. You will keep the cheese in the press about one half hour—press it dry; about as much time is enough to set. Then have in the side of the setter, two inches from the bottom up the side, put in the faucet so the green can settle below the faucet; then draw off and fill your plates one half-inch deep.

VI. Prepare your rack and shelves, three feet from the floor, eight inches apart, one above another, as high as six feet; have the shelves four rows of plates wide; have them so you can get on both sides with your pail with dipper to pour in the plates, all set on the shelves ready.

VII. You must have the dry-house or room tight, plastered room, so that the heat will escape only from one window; have that drop down about three or four inches, so that the steam can escape. We want no chopping or jarring about.

VIII. As to heat, we want the thermometer hung half-way up the room to temper the heat; you want the heat kept up from 125 to 150 or 160, and have coarse, hard, dry wood; if heat gets down it will sour. The business pays well, so keep up heat night and day until you get through.

IX. As soon as the opium is dry enough to scrape off the plates (don't dry it so hard you can't) put into square forms, one pound in each piece. About $3\frac{1}{2}$ inches square will be the size of one pound of opium.

Mr. Wilson makes two kinds of opium, one by cutting gashes in the capsulus and gathering the milk or gum that exudes. Then he cuts the tops of the plants, saving some for seed, and grinds them in a mill, and dries away the juice on earthen plates. This gummy or bogus opium he mixes with the true at the rate of two ounces of milk opium to 14 of the gum opium.

Dr. Hexamer: There is no difficulty or mystery about the poppy. It is raised all through the south of Europe. We import a great deal of this medicine. Mrs. Winslow uses a great many tuns of it to make her soothing sirnp.

Dr. Sanger—Mr. Chairman, 'opium is a dangerous and fascinating remedy. Doctors use it quite too often, and they seldom let the patient know how often. The habit of eating it is easily formed but almost impossible to throw off. Alcohol is bad enough, but opium is a fiend. I think the club should with caution suggest the prostitution of our virgin soil to the production of any more noxious drugs. Hops do no good. But I should deprecate any step the effect of which would make opium cheaper. The dearer the better. I wish it was \$100 an ounce.

Dr. Miller—This man charges \$400 for his mill, seed for an acre and his manual for opium growers. For \$2 the Harpers will sell you a book after reading which no man will feel inclined to help curse the race by making opium cheap.

ON ELIXIR OF CALISAYA, IRON AND BISMUTH.

BY ROBERT W. GARDNER.

Editor Journal of Pharmacy :

DEAR SIR,—As an unofficial preparation, known as “Elixir Calisaya, Iron and Bismuth,” has acquired considerable reputation, and is being commonly used in various parts of the country, and having seen no reliable formula published in any of our leading pharmaceutical journals, I would most respectfully submit my process, which I have for years employed, and which furnishes a permanent and reliable preparation, containing just proportions of each active ingredient, free from any disagreeable quality, and the bismuth of which does not conceive such an affection for the bottom of the bottle that it fails to remain in solution.

Take of Pyrophosphate of Iron scales, one troyounce,
Citrate Bismuth, one troyounce,
Sulphate Quinine, twenty-four grains,
Citric Acid, eight grains,
Carbonate Magnesia, one drachm,
Sugar, half a troyounce,
Water of Ammonia, sufficient,
Oil Orange, best, half a fluidrachm;
Oil Lemon, fifteen minims,
Oil Caraway, five minims,
Oil Nutmegs, five minims,
Alcohol, eight fluidounces,
Syrup, twenty fluidounces,
Water, sufficient.

Rub the oils with the sugar and magnesia, gradually adding one pint of water, and filter. Put it into a half-gallon bottle and add the syrup.

Dissolve the pyrophosphate iron in two fluidounces water, and add to the mixture.

Now add seven fluidounces of alcohol.

Put the quinine, citric acid, one fluidounce of water, and the balance (one ounce) of the alcohol in a capsule; heat over a spirit lamp until dissolved, and mix with the other ingredients.

Rub the citrate bismuth with one ounce water, and carefully add sufficient water of ammonia to effect the solution. Mix with the other ingredients.

Add water of ammonia until neutral to litmus paper (avoiding excess), and finally as much water as will bring the whole to the measure of sixty fluidounces, and filter. To be kept and dispensed in dark bottles.

One fluidounce contains about eight grains ammonio-citrate bismuth, eight grains pyrophosphate iron, and the equivalent in quinine of sixteen grains of calisaya bark.

The following is the process I have employed for making citrate bismuth: First,

Take of pure sub-Nitrate Bismuth, two troyounces,
Nitric Acid (sp. gr. 1.44), 1450 grains,
Water, sufficient.

Put the bismuth in a porcelain dish; add the acid, and heat over a spirit lamp until the bismuth is dissolved; then add one fluidounce water, and let stand until cold; then gradually add water, constantly stirring with a glass rod, until a further addition produces milkiness, or until the whole measures one and a-half pints. Filter and set aside. Next,

Take of Carbonate Soda crystals, sufficient quantity,
Citric Acid, three troyounces,
Water, one and a-half pints.

Dissolve the citric acid in the water and add sufficient carbonate of soda (previously dissolved in water) to exactly neutralize the acid. It is important that there shall be no excess of soda, as the resulting citrate bismuth would be contaminated with the oxide after decomposition.

Put the bismuth solution in a suitable vessel, and add, stirring constantly with a glass rod, sufficient of the solution citrate soda exactly to decompose; the precise quantity is known to have been added, when, after placing the whole upon a cloth filter, the washings, after having been suffered to run awhile until clear, *first* fail to precipitate bismuth when dropped into water, and *second* show no precipitate upon the addition of a few drops of ternitrate bismuth, a small quantity of which should be reserved for this purpose. When the liquid portion has mostly passed, pour

water upon the filter until thoroughly washed from nitrate soda, or until the water passes tasteless; then, after draining, transfer to bibulous paper, and dry by gentle heat.

Respectfully,

ROBERT W. GARDNER,

Bergen City, New Jersey, April 16, 1869.

IMPROPER USE OF TITLES.

BY JOSEPH HARROP.

[A name with the appendage M. D. should rightfully belong only to a regular medical graduate. The word "Doctor" is a generic term legitimately applied in many ways with wholly different significance:—Thus we have Medicine Doctors, Divinity Doctors, Law Doctors and Philosophy Doctors, from the regular school, and some of our trans-atlantic Horse and Cattle Doctors have diplomas of European schools. Each of such persons no doubt feels entitled to be addressed as Doctor. The only doctorate that pharmacutists have aspired to, (except they embrace Medicine) is the Doctorate of Philosophy, and of this class several worthy examples exist in this country, generally educated in Germany, and such usually attach Ph. D. to their name in writing articles. Then there is a class of apothecaries, especially in the rural district towns, who, taking advantage of the tendency of the public to accord the title to any one connected with drugs—accept it, and on their signs and labels exhibit the symbol of dignity and learning as of right.

This is all wrong and contrary to the ethical views of our Association and Colleges. Apothecaries should neither use the title nor practice the profession of the Doctor. So much in obedience to the last sentence of our correspondent. We will go a little farther and say that it is no uncommon occurrence to observe original articles from this Journal reprinted wholly or in part without credit, and as a consequence other journals quoting them from such journals. It is due to honesty and truth to give credit to the original source of all papers worth quoting, when possible, and we ask it as our due.—EDITOR AM. JOUR. PH.]

Mr. Editor.—I am under the necessity of noticing an occurrence which must, I think, very often happen,—the addition of M. D. to the names of individuals writing pharmaceutical papers.

The article on "Fluid Extract of Liquorice-root as an Excipient for Quinia," which was published in your "Journal" for March, over my signature, was copied by several journals with the addition of "Dr." to the name. This I would not consider a personal discredit; but it is, in a professional point of view,

ignoring the rightful source. It is doing what pharmacutists as a class are, and have been trying for years past to undo ; namely, to separate pharmacy from medicine. It would appear that in most of the medical and scientific journals of the day it is taken as a foregone conclusion, that writers on these subjects must be either a doctor or a professor. That the pharmaceutical journals should insist on this point being made known, and well understood, will appear patent to all.

Respectfully,

JOSEPH HARROP.

Leavenworth, Kansas, April 15, 1869.

ADDITIONAL NOTE ON SOAP LINIMENT.

By J. B. MOORE.

To the Editor.

Dear Sir.—In my hastily written article on "Soap Liniment," which was published in the March number of the Journal, I inadvertantly omitted to state that, where coarse powdered castile soap is used in making this liniment, that the proper deduction from the weight of the soap should be made for the loss of moisture in drying, which, I presume will average in castile soap, as it is usually found in the market, about 14 per cent. If this deduction is not made, the preparation will be found to deposit a portion of the soap on standing. I would state that instead of four troy ounces in shavings, the officinal quantity, I am in the habit of using three troyounces and a half of dry soap in coarse powder, which is nearly the equivalent, and which has proved satisfactory in practice.

Yours respectfully,

J. B. MOORE.

ON TITRATED OPIUM EXTRACT—SVAPNIA.

By WILLIAM PROCTER, JR.

Many years ago, probably twenty, Prof. David Stewart, of Baltimore, wrote on the importance of preparing laudanum of uniform strength, by making it of assayed opium, or by assaying it in coarse preparation. He brought this subject forward during one of the pharmacopœia revisions, but the difficulty

presented by the skill and preparatory knowledge and the long time required, was too obvious to make its introduction into the code advisable. Meanwhile, the aqueous extract of opium laudanum of Duhamel and Dupuy, were followed by the elixir of opium of the writer, (now the tinct. opii deodorata of the Pharmacopœia). The almost sole fault of the latter preparation, beyond its expensiveness, is want of uniformity arising from the variable strength of opium.

In 1860, Dr. E. R. Squibb, in an elaborate paper published in this Journal, introduces his liquor opii compositus, which, besides being freed from the objectionable and offensive ingredients of opium, was assayed to a regulated strength of four grains of morphia per fluidounce, intended to represent laudanum made from uniform ten per cent. opium, so far as the morphia strength was concerned. Unfortunately, in our opinion, Dr. Squibb introduced his U.S.P. Hoffman's Anodyne as an ingredient to the extent of one-eighth. Whatever advantage this might add in particular cases, it must be evident that, as a substitute for opium and morphia and to be used in various forms of diseases, its omission would have simplified the preparation and rendered it more likely to be adopted into permanent use. Battley's sedative solution may also be classed with the above as aiming to modify and improve the anodyne qualities of laudanum. Quite recently in French Pharmacy, Mr. Adrian has introduced a series of preparations based on titrated or assayed opium of a fixed morphia strength.

The latest of these suggestions to modify opium is that of Dr. J. M. Bigelow, of Detroit, which he called "purified extract of opium," and which quite recently has been taken hold of by Frederick Stearns, of Detroit, as a business operation, substituting the word "svapnia" for that of Dr. Bigelow, as a more promising *trade mark*. It is to be regretted that these gentlemen, in the furtherance of a perfectly legitimate improvement in pharmacy, should have felt it necessary to bow to the spirit of empiricism so rife in our land, in order to secure the profits of their enterprize. If they claimed their preparation as embodying a new and valuable alkaloid, then their name would have been quite appropriate. As hinted in our last number, we have

made some experiments, chiefly with the view of forming an estimate of its value as a pharmaceutical preparation, and in doing this extended our research into an assay of its morphia strength. Whilst thus engaged, the following communication was received from Dr. Bigelow, which we presume was intended for publication, and before proceeding further our readers should hear the views of the author of Svapnia.

DETROIT, March 29th, 1869.

PROF. PROCTER :—

Dear Sir,—In your notice of Svapnia (editorial, pp. 186, 187, *Amer. Jour. Pharm.*), you say that if the manufacturers can keep the composition uniform, and it can do what is claimed for it, it will certainly merit attention, and then that “the morphia strength should be given.” In reply, I would state that the preparation does not exclusively represent morphia, nor depend entirely upon it for the hypnotic and anodyne properties of which it is possessed; therefore, neither the effects nor the dose can be made to correspond with that of morphia.* In the first place, in the preparation of svapnia, the alkaloids morphia, codeia and narceia, possessing solubilities of different degrees and in different menstrua, are separated from the other alkaloids, especially thebaina (paramorphia) and the other constituents of opium, without deranging the natural combinations in which they exist. These are concentrated to a fixed standard of measure, that is the menstruum is entirely evaporated, and the exact proportion of the alkaloids determined by assay. After the assay, inert soluble matter is added, sufficient to bring the whole equal to opium of a nine per cent. morphimetric standard, this standard being found in practice to be the most practicable and by means of which its effects most nearly compare with opium weight for weight.

It is very probable that codeia and narceia in different samples of opium vary to a certain degree, but the difficulties and complications of a perfectly reliable quantitative analysis have hitherto prevented us from making it, and we have, therefore, assumed that when the crude opium from which we manufacture svapnia is deficient in morphia, it holds good also in nearly the same degree with regard to codeia and narceia, and its strength is therefore regulated by the amount of the combined alkaloids found in the assay.

In reply to the regret that so costly a medicine as opium should be rendered more so by its being made a speciality, allow us to say that the charges with which we arraign opium are fundamental and serious. 1st. Its extreme variability in the constituents upon which its value depends. Dr. Squibb, in your Journal, tells us that it varies from 2 to 21 per cent. nearly. As long as the drug and prescription trade continues

* Since writing the foregoing, I have received the transactions of the Am. Pharm. Ass. for 1868, and I find I am corroborated in my views of this matter by the report of the Committee on the “Progress of Pharmacy.” They say that it is the prevailing opinion among the members of the Brit. Pharm. Conf. that either the preparations of opium should conform in strength to morphia, or that morphia should be substituted for opium.

Morphia cannot take the place of opium, else it would have been done long ago, on account of its beautiful preparation, equable strength and convenience in prescription. Mr. Deihl, the Chairman, most truly and pointedly remarks that “the question demands great caution and thorough investigation before a definite conclusion can be arrived at. It certainly does not appear judicious to graduate the strength of opium preparations by the amount of morphia it may contain, for it contains besides a large number of other active principles which of necessity play an important part in its therapeutical action.”

to be a matter of dollars and cents there will be found those who in putting up their prescriptions will substitute, either ignorantly or designedly—if not exactly the 2 per cent.—at least the lower grades for the higher, which was meant by the prescriber.

The effect intended to be produced necessarily fails, and the physician possibly may be dismissed in disgrace, or, if from long acquaintance he possesses the confidence of the patient, the failure is attributed to any thing but its real source. Cannot the variability—you may query—in the strength of the opium be obviated or remedied? Certainly it can. But not without making it a speciality, as morphia already is, and a consequent increase of the cost; the very objection you make to our preparation.

The same objection with the same force obtains against the deodorized tincture of the Pharmacopœia; for you will certainly not insist that the tincture made from an opium of 7 per cent., morphiometrical strength, is uniform with the same made from a sample yielding 15 per cent. of morphia. Is not svapnia then, in this respect at least, better than the tincture?

The 2d charge is that there are many constitutions and *diseases* where opiates are required, but in which the crude opium and morphia cannot be tolerated. In many, if not all these cases, my combination of the hypnotic alkaloids of opium will have a most decidedly happy effect.

Very many over-conservative persons in the medical profession, whose experience and habits of prescribing are founded upon the results obtained from opium and morphia, will hardly look up over the edge of the groove of habit they have cut for themselves so deep as to be almost buried by it—hardly look up and believe that any possible improvement may be made in the administration of such an old-time drug as opium; to such indeed, the medical *speciality* svapnia hardly appeals, but to the younger, or at least more liberal minded ones, it does. Its good fortune as a new remedy, besides its intrinsic merit, will depend much upon its being kept—for a time at least—a special manufacture in the hands of those most interested in its success therapeutically and financially, so that the professional public may have the article exactly as I make it and made under my personal supervision.

I am not willing, at least until the reputation of the article based upon it as made by myself shall be fully established, to put in the power of every ignorant or unprincipled person claiming the title of pharmacist to palm off on the professional public something called “svapnia” or purified opium, but which would in nine cases out of ten no more represent my article than the *tinctura opii*, as found in nine cases out of ten of the shops, represents that of the Pharmacopœia.

In regard to the cost of opium *being increased* by its being made a speciality, I think this inference is more an assumption than a reality, for it should be compared with other manufactures from opium, for instance morphia, one grain of svapnia being equivalent in anodyne power to one-third of a grain of morphia, and yet the svapnia is three-fourths less in price than morphia. Most respectfully yours, J. M. BIGELOW.

It will be observed that the claims for svapnia are, that it owes its power to the meconates of morphia, codeia and narceia only, and that it is deprived of other alkaloids and hurtful ingredients by a process, or series of processes, which does not alter these natural salts. The extract thus produced is assayed,

and on the knowledge thus obtained this extract is diluted with inert soluble matter until its strength is reduced to that of opium of a 9 per-cent morphimetric standard. But in the next paragraph, granting that the codeia and narceia vary in proportion like morphia, Dr. B. thinks this variation sufficiently uniform with that of morphia to regulate the strength of svapnia by the amount of all the alkaloids combined. Here is at once a cause of variability, inasmuch as abundant evidence exists of the unequal proportions in which these alkaloids are secreted in poppy juice.

What is said in regard to the variableness of opium as an argument for uniformity in svapnia is granted, but the range of percentages quoted from Dr. Squibb does not represent the regular market—but the history of opium past and present. We also grant that our argument against the price of svapnia applies equally to other improved preparations of opium, but not as we intended to explain it, and as we hope hereafter to do. The argument for keeping svapnia a speciality has a certain degree of merit;—it *is* true that novelties in pharmacy, even good novelties, are imitated by the unskilful and for a time, especially if the manufacture is difficult, some public advantage may accrue from this primary uniformity, but we argue that in drugs like opium, or cinchona, or ipecac, all should be open and untrammelled in pharmacy. Did Sertürner patent morphia? or Pelletier and Caventon quinia and strychnia? But in these views business men do not care to enter. Finally, as a rebuttal of the charge of increased cost, Dr. Bigelow argues the price of svapnia is much cheaper than that of morphia, and says:—
“ One grain of svapnia being equivalent in anodyne power to one-third of a grain of morphia, and yet svapnia is three fourths less in price than morphia ! ”

To reply to this let us return to our experiments and see what answer they have elicited.

Fifty grains of svapnia triturated with two fluidounces of water formed a cloudy mucilaginous solution, possessing a decided though mild odor of opium. This was thrown into 12 fluid-drachms of 95 per cent. alcohol, which occasioned a bulky whitish flocculent precipitate, in a light brown liquid which re-

tained the active part of the svapnia. The precipitate, collected on a filter well washed with alcohol and dried, weighed 40 grains. This substance is soluble in water, forming a cloudy solution, is precipitated by subacetate of lead, but not by the neutral acetate, is tasteless and probably is *gum arabic*. A repetition of this experiment gave the same result. It does not follow that all specimens of svapnia have the same proportion of gum, as Dr. Bigelow says the quantity of inert matter (gum), depends on the alkaloidal strength of the assayed extract, being less for the weaker and more for the stronger opium.

The alcoholic liquids carefully evaporated to dryness yielded ten grains of pulverizable extract, being 20 per cent. of the svapnia. This extract was dissolved in water and treated for morphia by Mohrs' process, as modified by Attfield, by boiling with hydrate of lime, acidulating with HCl, concentrating and precipitating with ammonia. The yield was so nearly two grains that it will be called that, which is equivalent to 4 per cent. of crude morphia, of a brown color, but reacting well with the tests. Not satisfied with this result, 50 grains of svapnia was dissolved in two fluid-ounces of water and the gum precipitated by subacetate of lead, and the excess of lead by diluted sulphuric acid and filtered. This was treated with hydrate of lime as before, filtered, acidulated with HCl, concentrated and precipitated with ammonia. After standing 24 hours it was collected on a filter, washed and dried, weighing 3 grains. It was now treated with non-alcoholic ether and then with boiling 95 per cent. alcohol till exhausted, leaving a brown insoluble residuum of 0.2 grain. The alcoholic solution evaporated yielded 2.3 grains of crystals of morphia, including a very little brownish uncrystallized portion, which is equivalent to 4.6 per cent. As by this process the codeia and narceia, if present, are rejected, no estimate could be made of them.

Svapnia is acid to litmus; 10 grs. treated with non-alcoholic ether afforded an acid solution. When evaporated a small varnish-like residue remained, decidedly acid, not crystalline, and containing a trace of odorous matter of opium. The acidity was not due to meconic acid.

Twenty grains of svapnia was triturated with 10 grains of

magnesia and sufficient water to form a creamy paste, allowed to stand half an hour to liberate the alkaloids, and then shaken with repeated portions of ether, .735, till exhausted. On evaporating the ether in a tared test tube, the sides of the glass were coated with acicular crystals. The concentrated ethereal solution was alkaline to test paper. When the ether and moisture had disappeared the contents of the glass weighed 0.9 grain, consisting, besides the crystals, of some amorphous colored matter, amounting in all to 4.5 per cent. of the svapnia. This was treated with liquor potassæ until deprived of matter soluble in that liquid; the putty-like residue was then washed, dried, and dissolved in hot, strong alcohol, from which it crystallized with the greatest facility; a drop of this solution evaporated on a microscope slide, was found to consist of several distinct crystalline forms, the most abundant of which was narcotina prisms, well marked. Some of these from the crystallizing vessel, gave a deep yellow hue with NO^5 , and when dropped on SO^3HO with a trace of nitric gave a deep red coloration. Shaken with water but little dissolved from the entire crystallization, and the solution was so feebly alkaline that a fragment of light red litmus paper required an hour to restore its blueness. The proportion of codeia was therefore very small. The third form of crystals were in stellæ of minute pointed prisms. Narceia being insoluble in ether, they were, of course, not that substance, and no attempt was made to determine their true character. Morphia was not detected among the first ethereal crystals. Assuming the ethereal alkaloids to amount to 2.5 per cent. of the svapnia, the whole alkaloidal matter here obtained is 7.1 per cent. exclusive of any narceia present; an approach to the 9 per cent. claimed by Dr. Bigelow. As Dr. Bigelow says his process avoids any chemical decomposition of the natural salts, and the presence of meconic acid in svapnia corroborates this view, it follows that he has no means of separating that portion of the narcotina existing in a saline state; hence it must remain in the svapnia. On the other hand, Dr. B. rejecting the standard of a fixed proportion of morphia, and adopting that of a fixed gross amount of all the alkaloids, it follows that this narcotina, which is very variable in quantity as a constituent of opium, displaces an equal

amount of valuable narcotic alkaloids, and may seriously impair the uniformity of the preparation.

Dr. Bigelow gives us no details of the method by which he claims to be able to isolate the meconates of morphia, narceia and codeia from the narcotina, thebaina, papaverina, cryptopia and other bodies of an alkaline nature in opium, yet in doing it he limits himself to neutral solvents. In the particular sample of svapnia examined all the opium extract was 20 per cent.; of this more than 8 per cent. was alkaloids; the balance bore the characters of extractive matter of opium that had become deepened in color by heat and air, as in ordinary extract of opium. The inference, therefore, is that by a series of solutions and evaporations with water and alcohol, as in Dr. Squibb's process for *Liquor Opii compositus*, a large percentage of the inert or objectionable matter is removed, and possibly ether (or benzine, as recommended by Mr. Ebert,) may be called in to aid and thus reduce the fifty per cent. of soluble matter of opium to 20 per cent. But the gross amount of alkaloids in good Turkey opium is more than 9 per cent., and to the extent that it is more, of course the proportion of this final extract in svapnia will be reduced. For instance, it is known that opium not unfrequently contains 12 and 14 per cent. of morphia, besides other alkaloids, and even as high as 20 per cent. has been found in rare instances. The proportion quoted by Gmelin, (Handbuch, xvi, 414), is 11.7 to 21.46 per cent. for true and pure Anatolia opium. Merck found 13.5 pr. ct. in fresh Smyrna opium. Dried French opium averaged, according to Guibourt, 17.7 per cent. of morphia, and the highest 22.9 per cent.

Gmelin gives the proportion of codeia as 0.73 per cent. (Mulder); 0.25 per cent. (Schindler); 0.25 per cent., (Merck).

The percentage of narcotina in Smyrna opium varies from 2 or 3 to 6 per cent., but is generally in larger proportion to the morphia in the India varieties. Of narceia our information is less complete, as well in regard to its identity and proportion as to its physiological and therapeutic characters. The extraordinary power attributed to the small portion of these alkaloids in svapnia needs confirmation.

Dr. Bigelow does not give his manner of assaying the purified

extract of opium. He says (Detroit Journ. Med. and Pharm., Jan., 1869), "I prefer Dr. Pereira's method to Dr. Squibb's." Dr. Pereira, so far as we are aware, only gives several processes of others; Dr. Squibb uses that of the U. S. P. for morphia. In view of what has been here shown, I believe it will be much safer to abandon his plan and give a simple morphimetric standard, which should be ten per cent., as easily remembered and as representing an average pure Smyrna opium, throwing in the additional influence of such of the other alkaloids as may be retained.

If this assay is at all correct, it is difficult to understand how one grain of svapnia should be equivalent to one-third of a grain of morphia, as in this instance it contained less than one-twentieth of a grain. It is true this is a single specimen, and might by accident have been imperfect, yet it was an original package duly certified. But granting that svapnia contains 9 per cent. of morphia; there is then only one-eleventh of a grain in a grain of svapnia, which Dr. B. says is equivalent to one-third of a grain in effect. To what agency is the effect of the remaining two and a half elevenths to be attributed?

In conclusion, it is suggested that it would be well to introduce into the Pharmacopœia of 1870 a formula for a titrated extract of opium of 10 per cent. morphia strength, if it is found possible to construct a practicable and reliable process, and in view of such an object the best simple method of assaying opium might very properly form a subject for communication to the next meeting of the Association by several observers.

ON SOME PANAMA DRUGS.

BY JOHN M. MAISCH.

I stated at the last meeting of the American Pharmaceutical Association that Mr. F. C. Herbruger, of Panama, had sent several drugs in use in that country, which were to be exhibited at that meeting, but did not arrive in time. Having received them since, I herewith furnish a description of the same, together with the brief notes of Mr. Herbruger and the details of some experiments calculated to throw some light on their be-

haviour. Mr. Herbruger has omitted to state their botanical origin or to send specimens of the plants from which they are obtained; we hope that with his aid the obscure origin of several Central American drugs may be ascertained.

Caranna hedionda, a gum resin much used here for external application in bruises, cuts, &c., is a very popular remedy in this country; it is mentioned in the *U. S. Dispensatory*.

The description on page 1486, 12th edition of the *Dispensatory*, agrees precisely with that of Geiger, as contained in his *Handbuch der Pharmacie*, published 1830, but not with the description on page 25 of his *Pharmacopœa Universalis*, published 1835, which is as follows:

Caranna, Gummi (Resina) Carannæ, Achariari. *Caragne* (French). A resin from South America, enveloped in the leaves of a reed; said to exude from *Bursera gummifera*, Lin., according to the opinion of others from *Amyris (Icica) caranna*, or rather *Cedrota longifolia*, W., a tree of the natural order Terebinthaceæ. Pieces grey-brown, green-blackish, diaphanous at the margin. When fresh, tenacious, like pine resin; when old, rather fragile, with a shining fracture; odor slight, resembling ammoniac and tacamahac, taste bitterish, unpleasant; fused by a gentle heat it gives off a strong not unpleasant odor. Caranna resembles the resin called Balsamum Acouchi, Aracouchinis. Alouchi.

Wiggers refers caranna to *Bursera acuminata*, Willd., s. *B. gummifera*, Jacq., and describes, after Martius, three kinds which are probably derived from different trees, namely: 1st, square pieces with layers of, and wrapped into, leaves of a *Laurus*, with a waxy lustre upon the fracture, dull yellow greenish in thin layers, becoming soft by the warmth of the hand and mouth, and resembling guaiacum in taste; 2d, similar pieces of the size of a hand, softer, and wrapped in leaves of the *musa*; 3d, dark dirty green uneven pieces, 3 to 4½ inches wide, 3 to 10 inches long, wrapped in leaves of *Maranta lutea*, with little lustre, small white dots and mixed with fragments of leaves and wood, not softened by the hand, inodorous, very sandy and with little taste.

Lindley, in his *Flora Medica*, says: *Icica Caranna*, H. B. K., yields the fragrant balsamic substance called Caranna, according to most writers. Dr. Hancock is, however, of the opinion

that the Aniba of Aublet, or Cedrota of Schreber, the affinity of which is unknown, really produces it.

Redwood's supplement to the Pharmacopœia follows the foregoing statement.

The oldest reference to the drug in question which I have found in works that I could consult, is in *Encyclopædia Britannica*, published in 1796, as follows: Caranna or Karanna, a very scarce gum which comes from New Spain; it is said to possess many extraordinary medical virtues, but the present practice takes no notice of it.

The *Cyclopædia*, &c., by Abraham Rees, published in Philadelphia (time?), has a more extended notice, which appears to have been compiled from some older works on *Materia Medica* and the accounts of travellers; we select the following passages: Caranna, brought from some parts of the West Indies, as Carthagera and New Spain. The trees from which it runs are like the palm tree. When it is fresh it is white, but as it grows stale it becomes greyish inclining to green, in which condition it is sent to Europe, where the white is seldom to be met with. It is brought in lumps wrapped up in leaves. To be of the best quality it must be soft, of a pleasant aromatic smell and as white as snow.

I have not been able to procure Dr. Hancock's paper, which is published in the *Edinburgh Philosophical Journal* 1829, Oct., 233, so that I cannot say upon what grounds he bases his assertions of the origin of caranna; nor the account of Monardes, quoted by Guibourt, from which it appears to have been first exported to Europe about the year 1560. It comes from the neighborhood of Carthagera or Nom-de-Jésus, has the color and odor of *tacamahac*, but the latter is stronger; is shining, oleaginous and tenacious.

Guibourt, in *Histoire Naturelle des Drogues simples*, Paris, 1850, III, page 487, states that caranna is said to come from a Mexican tree which Hernandez calls *arbor insanix*, *caragna nuncupata*, and that it comes in masses enveloped in the leaves of a reed. Guibourt has not seen any authentic specimens of caranna, but describes three samples under that name in his possession: 1st, irregular pieces of the size of a nut, hard, greyish

black, opaque, fracture dull, readily fusible, completely soluble in alcohol, when rubbed, of an odor intermediate between tacamahaca and pine resin; 2d, a larger mass of 500 grammes, flattened, black-green, opaque, fracture granular and glossy, odor between elemi and pine resin; 3d, tears about the size of beans, flattened, surface unequal, glossy, deep black green; fracture unequal, vitreous, in thin pieces transparent, odor strong but less agreeable than tacamahaca, becoming soft between the teeth, taste somewhat resinous, neither acrid nor bitter, the alcoholic tincture reddish, the undissolved portion consisting of earthy matter and a deep green substance giving off an aromatic odor on being heated. A fourth kind, the *Amboina caranna* of Rumphius is likewise described.

On comparing the different descriptions as given above, it becomes evident that different exudations have been described under the name of caranna, and it is not improbable that in various portions of Central and South America this term is applied generically. This supposition appears to be verified by the specimen sent by Mr. Herbruger, which does not entirely agree with any of the above descriptions. I received it in a tin can. It is of the consistence of a rather soft pitch, but far less tenacious; the surface is of a brown-blackish green color; the interior is of a dirty fawn color inclined to green, intermixed with streaks and patches of a brown red substance, having a somewhat pulverulent appearance; exposed to the air it rapidly darkens, first assuming a liver color and finally dark brown-green; the interior portion is perfectly opaque, but with the change in color becomes transparent in thin layers, which, when quite dry or nearly so, are of a brown red, almost ruby color. Its odor has at first a faint resemblance to ammoniac, but is mainly almost identical with myrrh, being however much stronger; its taste resembles that of myrrh, being rather more aromatic and much less bitter; when chewed it feels somewhat gritty between the teeth, which is due to dust and earthy matter, plainly visible when thin transparent layers are viewed under the magnifying glass.

100 grains of caranna were treated with alcohol and the insoluble portion was thoroughly washed with alcohol; after drying, the residue weighed 25 grains and consisted of small chips of bark, fragments of leaves, lumps of a red-brown earthy matter,

not altered by heat and containing much iron, and of fine brown and brown-black earth. The tincture, measuring four ounces, is of a yellowish brown color, much darker than tincture of myrrh, possesses an acid reaction and the characteristic odor; diluted until it is almost colorless, a red color is produced on the addition of nitric acid; if the tincture is mixed with water it becomes milk-white, and the addition of nitric acid now produces a rose color which is very permanent. That tincture of myrrh is colored red by nitric acid is well known; if the acid is added after the previous addition of water, nitric acid produces a similar color; on standing for some time a brown precipitate is separated and the turbid supernatant liquid assumes a rose color.

The tincture slowly reddens blue litmus paper and on evaporation leaves a resinous mass of a ruby brown color, perfectly transparent, readily fusible and soon becoming brittle on exposure. This residue dissolves readily and completely in alcohol, ether, chloroform and oil of turpentine, and is partly soluble in caustic alkalies, to a larger extent in the fixed alkalies than in ammonia.

Caranna, when continually triturated with water, is to a small extent disintegrated and forms an incomplete emulsion, which soon deposits all the resinous matter.

From its properties and behaviour it admits hardly of any doubt but that the caranna of Panama originates from a tree belonging to the natural order of Terebinthaceæ, but the genus and species from which it is derived is not clearly established yet.

It is mentioned above that Hancock refers this oleoresin to the Aniba of Aublet; but this author, who always records very carefully the exudations of the trees, omits to state in this case that the aniba yields an exudation; he simply says: "*Lignum trunci aromaticum citrinum*;" and it is scarcely probable that this tree should yield the caranna and he not have been informed of the fact, while he carefully records many facts connected with the wood.*

* Cet arbre est appelé Bois de Cedre par les habitans du comté de Gêne. On en travaille le bois pour faire des piroques, et ils prétendent que le tronc pourrait servir à faire des mats de navire.—*Histoire des plantes de la Guiane française. Par M. Fusée Aublet, 1775. Tom. I. p. 328.*

In *Traité général de Botanique* par Maout et Decaisne, Paris, 1868, p. 316, it is stated: "L'*Icica altissima* donne la gomme Carana qui remplace en Amérique le baume de Giléad. Aublet, however, states, on page 342, that the wood of this tree is called cedre blanc and cedre rouge, according to its shade of color, that it is light, and when dry floats upon water, and that articles made from it last very long; further, he says, "e cortice inciso succus balsamicus et resinosus, odoris grati stillat;" but, though he usually records carefully the vulgar names, he does not mention the name of caranna.

Among the species of *Icica* not sufficiently known, DeCandolle enumerates *I. Carana*, HBK., and states: "Cortex fundit gummi albidum." Kunth* does not give any more information on this subject; the larger work of Humboldt, Bonpland and Kunth, *Nova Genera Americana*, I have not been able to consult. The tree was found near the river Orinoco.

That *Bursera gummifera*, Jacq., should yield caranna, is not very probable. Grisebach† says of this plant: "A lofty tree, from all parts of which gum resin exudes on the slightest touch." It occurs on the Bahama Islands, Jamaica, Dominica, St. Vincent, Cuba, Panama, Venezuela. If, therefore, the caranna of the Central or South American Continent were obtained from this tree, it could also be had from the islands named, and would undoubtedly have been exported from there at a time when its virtues were so highly extolled in Europe, and when it was official in the pharmacopœias‡ of several of the European States, some of which had possession of those very islands and countries in which this tree was at that time known to grow. Moreover, Maout and Decaisne§ refer to this tree the resin Chibou or Cachibou, which coincides with Guibourt's statement in *Histoire Naturelle*, &c., iii, p. 479, who also mentions that this resin is often imported to France under different names and with particu-

*Sinopsis plantarum quas in itinere ad plagam æquinoctialem orbis novi collegerunt Al. de Humboldt et Am. Bonpland. Parisiis 1825. Tom. iv.

† *Flora of the British West Indian Islands*. London, 1864, p. 173.

‡ *Pharm. Wirtembergica*, Ed. 6, 1798. *Pharm. Gallica*, Paris, 1818. *Pharm. Hispanica*, Ed. 3, 1803. *Pharm. Lusitanica*, Lisbon, 1825.

§ *Traité général de Botanique*.

lar characters, all of which are, however, different from those of the caranna in my possession. Nor has this latter oleoresin any resemblance with aracouchini, as stated by Geiger, which, according to Aublet, comes from *Icica Aracouchini*, is yellowish, balsamic, aromatic, liquid like turpentine, and retains its fluidity for a long time.

In reviewing all these statements in regard to the origin of caranna, it is obvious that the specimen in question is neither derived from *Aniba guianensis*, Aubl., *Icica altissima*, Aubl., or *Bursera gummifera*, Jacq. ; to determine its origin, I hope to be favored by Mr. Herbruger with all parts of the plant necessary to establish its identity.

Leche de Sande or *Resina de Sande*. When it first exudes from the tree it is a thick milky juice, resembling milk of caoutchouc, but by exposure to the air and age it gradually becomes a solid. It is extensively used in this country as a plaster, in enlargement of the spleen, which it is said to cure. This resinous mass, as received, is a soft solid of about the consistence of balsam of tolu. Externally it is nearly black, internally of a grayish white, which exposed to the atmosphere rapidly darkens. Its odor is like that of crude india-rubber, and it is almost devoid of taste. It fuses very readily, the black portion floating on the surface and leaving, after congealing the lower portion, a uniform dark gray color. It takes fire with some difficulty, and burns with a bright luminous flame. It is devoid of elasticity both before and after fusion. Chloroform, ether and oil of turpentine readily dissolve the entire mass, with the exception of the black portion, which is left behind in a finely flocculent form ; the filtered solutions are nearly colorless, and leave, on spontaneous evaporation, a yellowish gray mass, separating at the same time some black flocculent matter. Alcohol behaves similar to the solvents mentioned ; but the solution is effected with more difficulty. The undissolved portion, after having been washed upon the filter with the menstruum, is in flocks without adhesiveness. I am not able to give its origin.

Cativo de Mangle resembles Venice turpentine ; it is used in this country for catching flies, for which purpose it is spread on paper, and the flies, on alighting, firmly adhere to it. It is also used as

a coating for the bottoms of canoes and small vessels, being boiled with quick lime and applied warm, when it soon becomes a hard and horny mass. This substance is a thick liquid of the consistence of turpentine, a brownish color, turbid but without any sign of crystallization, in thin layers whitish and merely translucent; its odor is slight, reminding of rancid butter; taste slight. On the application of heat it fuses to a thin brown, perfectly transparent liquid, but loses its transparency again on cooling.

It is soluble in ether and oil of turpentine; with alcohol it forms a turbid solution, which is rendered milk-white by water, separating at the same time an oily looking liquid at the surface. Solution of ammonia and potassa readily yield with it almost transparent solutions which, on agitation, foam like suds. Boiled with milk of lime it becomes hard on cooling. Held in the flame it burns with a bright sooty flame.

It is not improbable that this is obtained from *Brusera acuminata*, Willd., which by modern writers is united with *B. gummifera*, Jacq. DeCandolle* says: "Fundit oleam quoddam essentielle concretum flavum." Another species of the same natural order, *Hedwigia balsamifera*, Swartz, yields, besides a finely flavored resin, a thick liquid of the consistence of copaiva, called in France baume à cochon.

A substance resembling gutta percha. This came in a flattened circular cake, about $5\frac{1}{2}$ inches in diameter and $2\frac{1}{2}$ inches thick, externally of a dirty brown yellowish color, internally white with streaks of dirt, showing that the mass while liquid has either been collected in ditches in the ground, or that while in suitable vessels it had been exposed to dust and dirt, and when nearly hard the mass was formed into a cake, the dirty surface being placed inside. Near the edges, where the mass had been longest exposed to the atmosphere, the fracture is smooth and shows veins of a dull brown-yellowish color which, cut with a knife, exhibit a waxy lustre. Between and outside these veins the fracture is finely uneven and almost mealy. The mass is without odor and taste; held between the teeth it gradually becomes pliable without adhering to the teeth. Carefully heated it

* Prodromus, ii, p. 78.

softens sufficiently to allow of being moulded; at a higher heat it fuses partially, giving off white fumes with very little odor, at the same time becoming black; while cooling it is rather adhesive and possesses considerable elasticity, both qualities being retained to a certain degree for weeks. When approached to the flame, it takes fire and burns with a bright sooty flame. Alcohol has no effect on it; ether and light coal oil (so-called benzine) dissolve the white portion, leaving the yellowish part and impurities behind; oil of turpentine furnishes a turbid solution and converts the yellowish part into a thick oily liquid; chloroform and bisulphide of carbon yield milk-white emulsions without effecting clear solutions.

The substance, if obtainable in sufficient quantity, could undoubtedly be used in the arts for many purposes in place of gutta percha.

EMULSION OF COD-LIVER OIL.

To the Editor of the American Journal of Pharmacy.

We send you the following formula we use in our store for our Emulsion of Cod-Liver Oil, for publication in the pages of the American Journal of Pharmacy.

Syrup of sucrate of lime $\text{f}\overline{\text{3}}\text{i}$, of a strength representing six grains of the hydrate of lime.*

Water, $\text{f}\overline{\text{3}}\text{v}$,

Cod Liver Oil, $\text{f}\overline{\text{3}}\text{ix}$,

Essential oil of almonds, six drops. Mix.

Slight modifications are sometimes required on account of changes of season and other causes.

We remain yours respectfully,

April 20th, 1869.

J. MILHAU'S SONS.

GLEANINGS FROM THE GERMAN JOURNALS.

BY JOHN M. MAISCH.

Persulphide of hydrogen.—A. W. Hofmann has discovered a crystalline compound of this body with strychnia. If this alkaloid is dissolved to saturation in cold alcohol, an alcoholic solution of sulphide of ammonium, containing free sulphur, will in a

* See this Journal, 1867, page 336.—EDITOR.

short time separate from it lustrous crystals ; after twelve hours the sides of the glass vessel are covered with beautiful orange red needles, often a centimeter in length, which are obtained pure simply by washing with cold alcohol ; they are insoluble in water, alcohol, ether and sulphide of carbon. From the elementary analysis, the following formula is calculated : $C_{42}H_{22}N_2O_4, H_2S_6$. Treated with concentrated sulphuric acid, the crystals lose their color, and on the addition of a little water sulphate of strychnia is dissolved, and colorless transparent oily drops of persulphide of hydrogen are separated, which are slowly decomposed into sulphur and sulphide of hydrogen.

Quinia, cinchonia and brucia do not yield an analogous compound. An alcoholic solution of 2.03 grm. strychnia yielded after twelve hours 2.287 grm. of the red crystals = 87.2 p. c. of the theoretical quantity. The author suggests that this compound might probably be serviceable for obtaining pure strychnia from mixtures, &c.—*Chem. Centralblatt*, 1868, p. 846, from *Ber. d. deutschen chem. Gesellsch.* i, 81.

Coloring matter of Claret.—A. Phillips states that sesquichloride of iron imparts to the juice of black cherries, huckleberries and mallows a violet color with a reddish or bluish tint. Pure claret, on the contrary, is colored red brown. The amount of free acid in the wine influences the shade of the color. The bluish grey color imparted by artificially colored wines, according to Boettger, to sponges previously treated with muriatic acid, is probably due to their retaining a trace of ferric chloride.—*Ibid.*, p. 864, from *Journ. f. prakt. Chem.* ci, 320.

Estimation of potassa for technical laboratories.—Plun Rett proposed bitartrate of soda for this purpose. Gladisz and Balo found that, from pure solutions, the precipitation of the potassa is the more complete, the greater the amount of the reagent added. The potassa of 5 c. c. of a solution containing 10 p. c. saltpetre was completely precipitated by 50 c. c. of a saturated solution of bitartrate of soda, while on using 10 c. c. of the former and 20 of the latter solution, 2.5 p. c. less than the amount of saltpetre was found. Cream of tartar is more soluble in water and in nitrate of soda than in bitartrate of soda. The

objection to the process lies mainly in the difficulty of washing out completely the bitartrate of soda from the precipitate.—*Ibid.* 879, from *Ibid.*, ciii, 495.

Preparation of hydriodic acid.—Dr. Cl. Winkler uses a moderately concentrated solution of iodine in sulphide of carbon contained in a cylinder kept cool; a quantity of water is poured upon the solution, varying in proportion to the strength of the acid desired, and sulphide of hydrogen is then passed into the iodine solution. The hydriodic acid generated is absorbed by the stratum of water, while the sulphur is dissolved by the sulphide of carbon; the reaction is complete when the violet color of the solution has passed into a pure yellow. The aqueous solution is then heated to expel the dissolved sulphide of carbon. *Ibid.* 816, from *Ibid.* cii, 33.

Preparation of cylinders for use with Drummond's light.—Dr. Jos. Philipps, of Cologne, gives the following directions:

Lime cylinders are obtained by burning pieces of white Carrarian marble, free from iron, between coke for an hour to an hour and a half. After the carbonic acid has been completely expelled, the cold lime is sawed into pieces of about 7 centimetres in length and 15 m. m. in thickness, which are preserved between powdered lime. The cylinders are strong and give a bright light.

For magnesia cylinders freshly burned magnesia is mixed with water to a stiff paste, which is rapidly put into suitable unsoldered moulds of sheet iron of the thickness of a thumb; by striking the moulds perpendicularly upon a hard surface, the air is expelled from the mass, which in a few minutes becomes warm, when it is put into a warm oven, where it soon becomes very hot. After about an hour the cylinders may be removed from the moulds; they give a brilliant light, but possess less strength than the former.

Chloride of magnesium cylinders are made in a similar way; the magnesia is first mixed with muriatic acid to form a thick liquid, when enough magnesia is rapidly added to form a stiff mass. When finished these cylinders resemble porcelain and yield a bright light, but give off disagreeable fumes when used. *Archiv der Pharm.*, 1869, Jan. 7, 8.

SULPHUROUS ACID.

BY C. UMNEY, F.C.S.

The introduction into the British Pharmacopœia of remedial agents of whose therapeutic value comparatively little was previously known, has been the means of giving to medical practitioners new material for research ; and has undoubtedly resulted in promoting investigations which otherwise would never have been attempted.

The action of sulphurous acid, a remedy of antiquity now placed in the Pharmacopœia, had been much less studied than it apparently deserved, for recently most beneficial results have followed its use in affections of the throat, by means of the spray producer, as recommended by Dr. Dewar,* whose experiments with this body in various forms of disease seem to have been most successful ; also used to some extent by Mr. Hamilton, Surgeon to the Liverpool Infirmary, in cases of typhoid or enteric fever ;† the results of whose experiments have been confirmed by Dr. Jones of Liverpool.‡ The latter gentlemen both used a solution *professedly* of the Brit. Pharm. strength ; Dr. Dewar, a more dilute solution, not exceeding 4 per cent. of real sulphurous acid.

For some time past I have observed that the solution of sulphurous acid, as supplied by manufacturers, variously labelled "Sulphurous Acid, Solution of Sulphurous Acid, Sulphurous Acid, B. P.," has very much differed from the acid as described by the Pharmacopœia, which is defined as having a spec. grav. of 1·040, and containing 9·2 per cent. of real sulphurous acid.

The commercial solutions I examined varied in strength from 2 to 6 per cent. ; none approached the high standard of the Pharmacopœia.

It was quite obvious that this deficiency did not arise from any attempt to make a preparation of inferior quality with such a body as sulphurous acid,—used as it is daily in the arts in enormous quantity as a cheap bleaching agent, and moreover as

* Dr. Dewar's Pamphlet on Sulphurous Acid.

† 'Lancet,' vol. i, 1869, p. 45.

‡ *Ibid.* p. 126.

in many laboratories it is merely a by-product,—but rather from some practical difficulties in making such a strong solution on the large scale.

The following experiments were made with a view to determine the strength of the acid that could be obtained by the official process, and to ascertain the circumstances most favorable to its production :—

1. Oil of vitriol was reduced in a flask by charcoal, the resulting gas after passing through the wash-bottle was allowed to slowly bubble through the water intended for its solution, this being kept at the temperature of the laboratory (65° to 70° F.); after eight hours nearly 2 per cent was found to have been dissolved, the solution having a spec. grav. of 1.009 at 60° F.

2. The current of gas produced, as in previous experiment, allowed to pass slowly through water for 36 hours. Solution nearly 6 per cent., spec. grav. 1.030.

3. Gas passed through water slowly under a pressure of one lb. (2 inches mercury) for 8 hours under same conditions as before. Solution 5 per cent., spec. grav. 1.028.

4. Solution made under 2 lbs. pressure (4 inches mercury) for 8 hours, indicated $5\frac{1}{2}$ per cent. Spec. grav. 1.030. (This clearly showed the advantage of using pressure, the solution of the gas being more readily affected.

5. Iced water was then kept around the receiver; the gas was slowly passed through for 16 hours, resulting in a solution of nearly 9 per cent., and 1.045 spec. grav.

6. Increased pressure repeatedly tried, the result being invariably the fracture of the generator.

Not having other available apparatus at hand, and as I had obtained much beyond the spec. grav. of the Pharmacopœia solution, and had almost approached its strength,—from want of leisure I did not continue my research.

The various solutions carefully examined* with a volumetric

* In weighing the acid for examination, I always counterpoised in the beaker in which the acid was to be weighed about one ounce of cold water, as I found this prevented the loss of gas of the strong solution which invariably resulted if weighed alone, the acid being taken out with a pipette, the analysis of each specimen was thus effected rapidly—certainly in three or four minutes.

solution of iodine of the strength indicated by the Pharmacopœia, $\frac{1}{10}$ of an atom (12·7 grains) in 1000 grain-measures (the accuracy of the iodine solution being confirmed by the volumetric solution of hyposulphite of soda), gave results which, combined with the various specific gravities of the solutions described, could only point to one conclusion, viz., that the Pharmacopœia solution did not coincide in its described spec. grav. as compared with its percentage of acid; for a solution of 1·040 indicated but 7·8 per cent. of real acid, instead of 9·2 per cent., or in other words, if the spec. grav. was correct, the *strength* was an error, or *vice versâ*.

The Brit. Pharm. 1864 directed an acid of 1·040 spec. grav., but only indicated the numbers of measures of iodine solution required for its saturation as equivalent to 8·3 per cent.

This, therefore, is an approximation to the result I have obtained.

In an excellent review of the officinal acids by Mr. C. H. Wood, article "Sulphurous Acid,"* it is said, "This acid is of the same strength, and is prepared in the same manner as before."

It is certainly of the same specific gravity, viz., 1·040, but I find by calculation that 88 measures of iodine solution less in 1·000 measures are indicated than by the B. P. 1867, an equivalent of nearly 1 per cent. real acid. The two solutions of the two pharmacopœias, although of the same specific gravity, cannot, then, be of the same strength.

The manufacture of the acid on the large scale, up to even the highest point to which I have arrived, is next to impossible. I will quote the remarks of a chemist, in a letter upon this subject to me, who is in the habit of making tons yearly. He says, "I obtain a solution of 1·030 easily (comparatively); and in cold weather and a slow current of gas, ordinarily I get acid from 1·025-30."

Through the kindness of Messrs. May and Baker, Battersea I have been favored by their chemist, Mr. Tyrer, with the result of two experiments made on a very large scale, and under the most favorable circumstances.

* Pharm. Journ. Vol. IX, page 64.

A charge of 200 lbs. charcoal and 140 lbs. oil of vitriol was placed in a still of 120 gallons' capacity; the gas washed and passed through a series of Woulfe's bottles, the exit pipe from the last bottle being weighted at 6 lbs. pressure. In temperate weather by this method an acid from 1.033 to 1.035 can be produced, and by passing through a second charge of gas from a fresh supply of oil of vitriol, a solution of 1.036 to 1.038 can be produced,—but this only on cold nights and working very slowly; if the gas is passed rapidly, more is lost than gained.

The second experiment was but a modification of this, substituting at the last of the Woulfe's bottles a pressure produced by a column of water of 12 feet (6 lbs. pressure), with plugs inserted at 3 feet intervals, so that by withdrawing them the pressure could be regulated. This means of producing pressure was adopted in preference to the valve, which invariably corroded, as it gave a ready means of allowing the carbonic acid and carbonic oxide to escape. The result, however, was an acid of only 1.038 specific gravity, as in previous experiment. To work regularly at this amount of pressure would be anything but desirable.

The U. S. Pharm. orders a solution of 1.035 specific gravity; no strength is however named, neither is a process given for its estimation; it does, however, direct the solution to be put into half-pint bottles, well stoppered, and kept in a cool place. In the 1837 edition of the French Codex, a solution of thirty-seven volumes is directed, the specific gravity described as 1.053. The gas, however, is made by the reduction of oil of vitriol with mercury, which gives a product nearly pure. This is almost identical with my result, taking into consideration the quantity of carbonic acid necessarily dissolved with the sulphurous acid under pressure.

It cannot for one moment be doubted that a solution of much greater strength than any here indicated could, in the experimenting room, under certain circumstances, be made without great difficulty (using copper and sulphuric acid to obtain the sulphurous acid); for we have the unquestionable authority of Bunsen upon the subject, who is thus cited by Miller, in his 'Elements of Chemistry':—"Water will absorb at 32° F., 68.8 volumes; at 59°, 43.5 volumes; and at 75°, 32 volumes."

Now the Pharmacopœia solution (which is about 37 volumes) was designedly made nearly one of saturation at the average summer temperature of this country, and, if one may be excused for making a guess, was described from calculations made from the above data of Bunsen's, and not practically worked out to see whether such a solution could be ordinarily obtained in the manufacturing laboratory without chance of failure, and, when made, be kept without great alteration in the various stages it would have to pass through, even if only from the manufacturer to the wholesale druggist, then to the pharmacist, in whose store it might remain for a year or more, being, perhaps, placed in a temperature many degrees above the point at which it was saturated, thereby causing expansion, liberation of gas, and inconvenience.

It may be here worthy of note, that a solution of sulphurous acid of any great strength decomposes into sulphuric acid in partially filled bottles four times as rapidly in a light green bottle as when kept in one of dark blue,—the maximum rate being in six months equivalent to 1.436 per cent. sulphuric acid. The following table will give, I think, sufficiently accurate for medicinal purposes, the specific gravity of solutions* from 1 to 8 per cent., made by the officinal process:—

Per cent. of SO ₂	Specific gravity.	Volumetr. Sol. of iodine, B. P.
1	1.005	108.6
2	1.011	217.3
3	1.017	326
4	1.022	434.6
5	1.027	543.3
6	1.032	652
7	1.037	760.8
8	1.042	869.5

The stronger solutions are most powerful, causing not a little inconvenience in transfer from one bottle to another, from the quantity of irrespirable gas given off; and it is to be doubted, had an acid been used of Brit. Pharm. strength, or even one approaching it, in the experiments of Mr. Hamilton and Dr. Jones, as described in the 'Lancet,' whether one-drachm doses to chil-

* Made by dilution of the stronger solutions with water.

dren and three-drachm doses to adults, every four hours, could have been given without ill effects. It is more probable that a solution, as ordinarily found in pharmacy, of about 2 or 3 per cent. was used.

I should suggest that a solution of 1·027 specific gravity, containing 5 per cent. by weight of real acid, be substituted for the present officinal solution at the earliest opportunity, such a solution being sufficiently strong for medicinal purposes. Their would then be no difficulties attending upon the production of acid of such strength, neither would there be the least justification for the entire absence of such a solution from pharmacy.

We should thus be giving the remedy a fair trial, and by its medicinal merits alone it would either retain its place or be expunged from future pharmacopœias. This communication, I trust, will prevent any blame from being attached to the pharmacist, if such a valuable remedy should undeservedly be brought into disrepute.

Laboratory 40 Aldersgate street, E. C.

In reply to a question from the Chairman, Mr. Umney said, he thought an acid containing 5 per cent. would be strong enough for use in medicine.

Dr. Attfield thought that if an acid of the strength indicated in the Pharmacopœia was really required, it would be necessary to obtain it by passing the pure gas into water, and not the two gases resulting from the action of charcoal on sulphuric acid.—*London Pharm. Journ., March, 1869.*

NOTE ON SULPHATE OF POTASSIUM IN ERGOT.

BY PROFESSOR ATTFIELD.

- In the official process for *Extractum Ergotæ Liquidum*, B. P., powdered ergot, freed from oil by ether, is exhausted by warm water, the mixture filtered, the filtrate evaporated to a low bulk, spirit of wine added, the mixture set aside for coagula to subside, and, after an hour, filtered and bottled for use. On recently carrying out this process, a correspondent (Mr. Romans, 55 Westgate, Wakefield) tells me that after adding the spirit of wine he had occasion to set the mixture aside during a night

instead of for one hour, and on the following morning found the walls of the bottle lined with crystals. These he collected, purified, and forwarded to me, with the request that I would ascertain their nature, and thus be enabled to say whether or not their separation involved deterioration of the extract. They were found to be the inert salt sulphate of potassium.

This note is published for two reasons: first, to assure any pharmacist who may have met with these crystals that their presence or absence in ergot or its preparations is of no therapeutic importance; second, to draw attention to a possible, perhaps a general constituent not previously noticed by chemists who have analysed ergot. Mr. Romans tells me the crystals amounted in weight to about 3 per cent. of the ergot employed. —*London Pharm. Journ.*, March, 1869.

NOTE ON AROMATIC SULPHURIC ACID.

BY PROFESSOR ATTFIELD.

A short time ago I was asked whether or not the official* aromatic sulphuric acid contained sulphovinic acid. Aromatic sulphuric acid is made by mixing gradually 3 volumes of sulphuric acid with 40 of rectified spirit, and then adding certain aromatics (cinnamon and ginger). Sulphovinic acid is also made by mixing sulphuric acid and spirit, but the volumes should be equal, the alcohol as nearly absolute as convenient, a temperature considerably above that of boiling water applied to the mixture, and the material allowed to digest together for twenty-four hours: even then the whole of the alcohol is not converted into sulphovinic acid. From these facts we should infer that sulphovinic acid is not formed to any considerable extent in making aromatic sulphuric acid. Still there is some rise of temperature in mixing 3 volumes of sulphuric acid with 40 of

* The Pharmacopœia and all in it is official (*office*, Fr. from *L. officium*, an office). There are many things which in pharmacy are officinal (Fr. from *L. officina*, a shop) but not official. To restrict the word *officinal*, first, to the contents of a pharmacist's shop, and, second, to that portion of the contents which is Pharmacopœial is radically wrong, and in future should be avoided.—J. A.

rectified spirit, hence the production of a small quantity of sulphovinic acid might be considered possible. To ascertain whether or not this were so, a portion of the diluted spirit was treated with carbonate of barium; the sulphate of barium separated by filtration, washed with acid and water, dried and weighed. The filtrate, which would contain sulphovinate of barium, if sulphovinic acid had originally been present, was evaporated to a small bulk over a water-bath. The weight of the sulphate of barium corresponded with that of the sulphuric acid, whence it was obtained; indeed, it was apparently somewhat greater—a result due, probably, to loss of alcohol during manipulation, and a corresponding increase of strength of the diluted acid. The filtrate from the sulphate of barium finally dried up without giving any sulphovinate of barium. These experiments were repeated, after the mixture of sulphuric acid and spirit had been set aside for fourteen days, with the same result; indicating that sulphovinic acid is not formed after a time. They were also repeated after due maceration with the aromatics, but, again, no sulphovinic acid was obtained. We are, therefore, now in a position to state that aromatic sulphuric acid, when made according to the Pharmacopœia, contains no sulphovinic acid.—*London Pharm. Journ., Feb., 1869.*

NOTE ON THE ADULTERATION OF PRECIPITATED SULPHUR.

BY PROFESSOR ATTFIELD.

Why is precipitated sulphur still usually adulterated to a scandalous extent with what may be termed plaster of Paris,—hydrous sulphate of calcium ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)? Nearly every book on chemistry and materia medica states that instead of being made by mixing hydrochloric acid and polysulphide of calcium, it is often prepared by the reaction of sulphuric acid and the sulphur salt, the result being precipitated sulphur (identical, so far, with the officinal article—*Sulphur præcipitatum* B. P.), but mixed with more than an equal weight of the calcareous mineral compound, which when well dried constitutes plaster of Paris. Every chemist and druggist therefore knows, or ought

ON THE ADULTERATION OF PRECIPITATED SULPHUR.

to know, that precipitated sulphur is more likely to be impure than pure, and yet the employment of the adulterated variety seems on the increase. From the following table it will be seen that out of eight samples which I recently purchased (for quite another purpose) within an area of a mile, only one was pure, one contained nearly half its weight of calcareous matter, and each of the others was actually two-thirds impurity and only one-third precipitated sulphur. In explanation of this condition of things, the statement is commonly made that the public has become so accustomed to the satiny appearance of the impure article (due to the selenitic character of the adulterant) as to regard the pure with suspicion, often refusing to purchase it. I cannot believe in the general application of this explanation. The public, surely, places too much confidence in a pharmacist's knowledge of drugs to persist in refusing a pure in favor of an impure chemical. Therapeutists cannot hope to arrive at a rational system of medicine unless the followers of pharmacy combine to crush the practice of adulteration. Precipitated sulphur is, doubtless, an exception to the general rule that drugs are less adulterated now than formerly, but clearly there is room for much improvement.

No.	Impurity in 100 parts of the "Sulphur."
1	66 $\frac{3}{4}$
2	43 $\frac{1}{4}$
3	66 $\frac{1}{2}$
4	66 $\frac{1}{2}$
5	66 $\frac{1}{4}$
6	66 $\frac{1}{4}$
7	pure
8	64 $\frac{1}{2}$

Chemists and druggists, their customers, and medical practitioners, should refuse to purchase any precipitated sulphur which leaves a white ash when a little is burnt off on the end of a table-knife or spatula. (The sulphur does no more damage to the steel than a rub on a knifeboard will remove.)

MR. HANBURY remarked that the only formula given in the Pharmacopœia for milk of sulphur produced this impure result.

DR. REDWOOD said that was rather an important point. He was far from being prepared to advocate the use of milk of sulphur in preference

to precipitated sulphur, but, nevertheless, when the fact of the former preparation, containing a large quantity of sulphate of lime, was brought forward as an imputation on pharmacutists for selling an adulterated article, he must take exception to the charge, and say that he did not admit it to be an adulteration. As stated by Mr. Hanbury, the only officinal process for making milk of sulphur was given in the London Pharmacopœia of 1721, and practically produced a mixture of sulphate of lime and sulphur, which was obtained by precipitating with sulphuric acid and a sulphide of calcium. It was quite possible, but by no means certain, that pure sulphur would answer the desired purpose better. As he had stated, with reference to some other preparations, it was sometimes found that an admixture of foreign matter, so far from injuring the action of a remedy, promoted its efficacy. This was said to be so with reference to the action of the resin of jalap and other medicinal substances; the intermixture of some inert material promoted the action of the medicine in certain cases; in what way he would not undertake to say, perhaps by merely separating the particles. At anyrate they should be careful how they too strongly condemned a preparation, merely on the ground stated in this case, when it was well known and had been long used by the public. They had been accustomed to take a certain quantity of milk of sulphur, and to expect a certain action from it. It mixed with liquids much better than precipitated sulphur did, and he believed a large number of the public, for this and other reasons, liked it better. He did not advocate the use of milk of sulphur, much less the substitution of it for precipitated sulphur, for milk of sulphur was one thing and precipitated sulphur another. If any one supplied the former in the place of precipitated or sublimed sulphur, they would act very wrongly; but when they were asked for milk of sulphur, he could not see that they were to blame for supplying it, and, in many cases, if pure sulphur were substituted, he did not think the public would be satisfied.

MR. BLAND said this subject had been discussed many years ago, and, as the result, he obtained some pure precipitated sulphur and retailed it, and the consequence was an almost universal complaint. Pure precipitated sulphur was with great difficulty miscible in water or any aqueous vehicle, which caused great complaint. Like many others, he had been obliged to fall back on the old preparation simply in self-defence.

MR. HILLS was surprised to hear Dr. Redwood advocate milk of sulphur as a genuine preparation. He would remind him that by the New Pharmacy Act those who sold adulterated articles were liable to a fine.

DR. REDWOOD considered that milk of sulphur, as usually sold, was not an adulteration.

MR. HILLS said he did not feel at all sure of that, himself.

MR. MORSON said milk of sulphur did not profess to be pure sulphur.

DR. ATTFIELD was astonished to find any one connected with that Society sheltering themselves in the matter of adulteration behind either

custom or an old Pharmacopœia. The public knew nothing about the old Pharmacopœia, or how the article was made, or what it was professed to be; if they asked for sulphur they expected to get sulphur. "Milk of Sulphur" was simply the popular name for the official preparation, and he was quite sure that purchasers, in using that name, did not know they were liable to be supplied with an article of which considerably less than half was sulphur. He maintained, as a matter of common sense, that an article which contained two-thirds of its weight of impurity was scandalously adulterated.

MR. HOOKER said that when he started in business some years ago as chemist in a provincial town, he determined to sell only pure drugs, and, accordingly, procured pure precipitated sulphur, which he attempted to sell instead of milk of sulphur. Some of his best customers, however, refused to have it, saying they had always been accustomed to get a good article, and did not like to have anything different. It was in vain for him to explain the case to them, and at last he was compelled to revert to the old-fashioned article. He should like to know what a druggist ought to do under such circumstances.

MR. HILLS said that in the establishment which he represented, nothing but pure precipitated sulphur was sold, and he would rather sell none at all than supply an adulterated article.

DR. REDWOOD said that principle was quite correct if they sold it under the name of precipitated sulphur; but what he contended for was, that the two things were quite different. Milk of sulphur was sulphur precipitated with sulphate of lime, according to the process originally given in the Pharmacopœia; it had long been in general use, and he did not consider it was any adulteration whatever to sell under its distinctive name a preparation which had been found advantageous. With the same reason, they might complain of any preparation in the Pharmacopœia which contained something more than was expressed by the name it bore, as an adulteration. For instance, tincture of senna contained something besides senna, but it could not be considered an adulteration.

DR. ATTFIELD asked if milk of sulphur was a good preparation, why was not the process given for it in the London Pharmacopœia retained in the present one?

DR. REDWOOD said he did not advocate the use of milk of sulphur, and should be glad to see it superseded by precipitated sulphur, which was more definite; but, as he had before remarked, there were practical difficulties in the way. One was the greater facility there was in mixing milk of sulphur with water, and he had been told, although he was not prepared to vouch for the accuracy of the statement, that those accustomed to take milk of sulphur found that it possessed greater efficacy, as a medicine, than pure sulphur without the addition of any sulphate of lime. At any rate, he had not medical authority to repudiate such a statement.

MR. WOOD said he had frequently taken milk of sulphur, but could not take precipitated sulphur.

MR. MARTINDALE said the process was first introduced in the London Pharmacopœia in 1721, and the preparation was there called *lac sulphuris*, which name had ever since been retained for that particular preparation,

MR. HANBURY thought, in the Pharmacopœia in which it was ordered, the process was given in ignorance. He was far from advocating the use of this calcareous sulphur, which he considered an abomination, and did not think there could be so much difficulty in introducing a pure article as some gentlemen seemed to suppose. In the house in which he was a partner, there had not been any so-called milk of sulphur for a long time. They always used pure sulphur, and never found any complaint.

A MEMBER said when a customer went to a chemist he trusted to him to supply him with a pure article; he did not know the difference between milk of sulphur and pure sulphur.

The CHAIRMAN thought the public judged in such matters very much by what they had been accustomed to receive, and if they had been used to an impure article, they would prefer it to the genuine.

MR. MORSON said milk of sulphur was an old preparation, which was literally a mixture of sulphur and sulphate of lime, and the subdivision of the sulphur by this means did, no doubt, influence its action. If any one asks for pure or precipitated sulphur, they should get it; but milk of sulphur was a different thing, which they also had a right to get if they wished for it. He recommended them to keep both articles, and supply whichever was wanted.—*Lond. Pharm. Journ.*, Feb., 1869.

ON THE IGNITING POINT OF THE VAPORS OF SOME COMMERCIAL PRODUCTS.*

By W. R. HUTTON, Esq.

It is a well-known fact that many commercial products at certain temperatures give off an inflammable vapor, and my object in bringing this paper before the Chemical Section is to give the results of comparative trials of the igniting points of a few of the leading articles of commerce, and also to explain the method employed by me in testing, which is very simple and sufficiently accurate.

In commerce there are several substances which, at the ordinary temperature of the atmosphere, are sufficiently volatile to emit enough vapor to form, with atmospheric air, an explosive mixture. There are many others which do not volatilize at

* Read before the Chemical Section of the Glasgow Philosophical Society, Dec. 21st, 1868.

quite so low a temperature, but which in a warm room, or exposed to the suns' rays, do give off vapors sufficient to render them dangerous; and there are others, again, that require to be considerably raised in temperature ere vapor is evolved, and, in consequence, may be considered sufficiently safe where ordinary care is employed.

I wish it to be distinctly understood that it is the vapor evolved from ordinary commercial substances, and not the point at which the substance itself will ignite that my results refer to. To illustrate the difference in the igniting point of the vapors evolved from different articles of commerce, I pour into one glass a small quantity of sulphuric ether, and into another glass the same volume of ordinary paraffin oil. The one substance—ether—is known to be very volatile, and on bringing a light to within half an inch of its surface an explosion takes place; the other—paraffin oil—is found not to be explosive at the temperature of this room, as it requires a higher temperature to evolve vapor before an explosion will take place.

In the subjoined table, showing the results of experiments made by me, the samples having been purchased in the usual way, I give the specific gravity of the different commercial products, and the temperature at which their vapor explodes when a lighted taper is kept at $1\frac{1}{2}$ inches from the surface; and also the temperature at which the vapor explodes when the lighted taper is kept at only half an inch from the surface:—

IGNITING POINT OF THE VAPORS OF SOME COMMERCIAL PRODUCTS.

	Specific Gravity.		Taper $1\frac{1}{2}$ inches from Liquid. °F.	Taper $\frac{1}{2}$ inch from Liquid. °F.
Sulphuric ether	·747	under	53	—
Bisulphide of carbon	1·270	—	53	—
Petroleum spirit	·706	—	53	—
Paraffin spirit	·751	—	70	68
Benzole, 90 per cent.	·861	—	74	71
Crude paraffin oil	·849	—	74	72
Ditto naphtha	·884	—	78	74
Brandy	·940	—	—	85
Wood naphtha	·840	—	88	81
Crude paraffin oil	·891	—	89	84
Ditto naphtha	·881	—	90	86

Holland gin	·930	—	—	90
Rum	·936	—	—	90
Methylated spirit	·827	—	97	86
Burning coal naptha	·859	—	100	91
Spirit of wine	·817	—	104	73
Whisky, 25 O.P.	·893	—	109	83
Ditto 11 O.P.	·905	—	110	84
Petroleum oil	·801	—	118	110
Light pitch oil	·920	—	119	109
Resin spirit	·922	—	122	106
Turpentine	·875	—	130	119
Sherry wine	·993	—	—	130
Port wine	1·003	—	—	130
Refined paraffin oil	·809	—	134	123
Ditto	·814	—	138	127
Fusel oil	·850	—	140	129
Resin oil	·987	over	212	—
Heavy pitch oil	·950	—	212	—

It will be observed that the specific gravity bears no relation to the temperature required to expel vapor from many of the products mentioned in the table, and this, in some instances, arises from the fact that they are not isolated chemical substances, but consist of distinct compound bodies mixed together, the lighter of which usually, but not always, distils off first. This is very well shown from the results obtained in experimenting on the two samples of crude and the sample of burning naphtha, the benzole having been separated from the latter by fractional distillation. In the crude naphtha there always exists a large proportion of tarry matter and naphthaline, and with a gravity approaching to ·890 as compared with burning naphtha, which has been freed from all tarry matter, and has a gravity not exceeding ·860; it is not to be expected that the crude will give off vapor as readily as the refined. This has been the case, however, as is indicated by the table of results. The crude gave off vapor at a much lower temperature than the refined burning naphtha; and the same remark applies to the results obtained from crude and refined paraffin oils from which paraffin spirit has been separated. In the case of spirit of wine and different proportions of water, and also of liquids that will mix with water, a deduction from the specific gravity might be made, which would at once indicate the igniting point of the vapor, and also

the percentage of spirit in it; this, however, I have not gone into. The proportion of volatile matters to be found in different crude commercial substances is exceedingly variable, and therefore no line for guidance do I offer; but in manufactured articles of commerce, where a volatile and a less volatile mixture are together, the manufacturer and the merchant have it in their power to exact a standard at which the vapor will not ignite. A very small percentage of a volatile compound is sufficient to make the whole bulk dangerous, and in some instances accidents from this circumstance are very apt to arise. In the printed table I have light pitch oil, the vapor of which explodes at 119° F.; this point of ignition is not what is considered at all dangerous as compared with bisulphide of carbon or benzole; it is, however, equally dangerous, and for this reason—that the latter is known to give off inflammable vapor which ignites at a low temperature, while the former, on account of its familiar name—pitch, oil, or creosote—is looked upon as not at all explosive. In this sample of light pitch oil, the volatile matter which gave off inflammable gas at 119° did not exceed 2 per cent., after which no combustible vapor was given off until a temperature of 180° was reached, thus clearly showing that the low explosive points of the vapors of some commercial substances depend upon a very small percentage of volatile extraneous matter.

Now I shall explain the small apparatus used in estimating the igniting point of the vapors, and which is very simple.

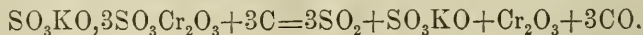
It consists of a water-bath, with basin thermometer and spirit lamp. In operating, I put the same quantity of cold water into the bath each trial, in order that the time required to raise the temperature of the water is as nearly as possible the same. Into the small basin I put a known measure of the liquid under examination (in this instance, also, the same volume is always used); the thermometer is then adjusted with the bulb immersed under the liquid in the basin. The spirit lamp is now lighted and placed under the bath—the water in the bath is gradually warmed, which, in its turn, heats the liquid under trial. The rise of temperature is indicated by the thermometer, and by means of a lighted taper and careful attention it is easy to catch the first flash of vapor evolved. In order to have exact com-

parative trials, it is not only essential to have all the experiments conducted on the same principle, as regards detail, but it is also of the greatest importance that the surface of the liquid and the taper used in catching the exact point at which the vapor explodes, shall be at an equal distance in each case. This point is of the first importance to all who test the igniting point of vapors; and to explain this statement more clearly, I have printed on the table the results of experiments made on the same commercial samples, keeping the lighted taper $1\frac{1}{2}$ inches from the surface of the liquid, in one case, and in the other at only half an inch from the surface of the sample under trial. The results are as expected—when the vapor has to diffuse and mix with atmospheric air through a space of $1\frac{1}{2}$ inches, it is found that a greater temperature is required in order to evolve the larger quantity of vapor, than in the experiments of only half an inch between the lighted taper and sample; and this is explained by the circumstance that the vapor, immediately on being liberated, mixes with the small volume of atmospheric air in the experimental basin, forming with it a mixture which, on meeting a light, explodes. In the other set of experiments, a greater temperature is required to disengage a larger volume of vapor to mix with the greater proportion of air.—*Chem. News, Jan. 22d, 1869.*

NOTE ON THE UTILIZATION OF CHROME ALUM.

By M. F. JEAN.

The manufacture of aniline green and violet, and of valerianic acid, gives abundant residues of chrome alum. These residues cannot be utilized as mordants, because, when calcined, they are insoluble in water, and therefore do not find a sufficient market, thereby considerably augmenting the net price of products prepared with bichromate of potash. Whilst endeavoring to turn these residues to account, I discovered that when chrome alum, previously mixed with three equivalents of carbon, is heated to redness, decomposition takes place as follows:—



If, on the other hand, chrome alum be decomposed with seven

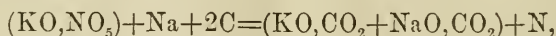
equivalents of carbon, the evolution of sulphuric acid is less than in the first case, and the mass taken up by the water yields sulphide of potassium and hyposulphite of potash: sesquioxide of chromium obtained under these conditions must be separated, by washing in acidulated water, from a certain quantity of sulphide of chromium, Cr_2S_3 , formed by contact with the sulphide of potassium. It is better to decompose the alum with three equivalents of carbon than with seven, because the decomposition is quicker and purer.

The industrial treatment of chrome alum is very simple; it consists of pulverizing and mixing the alum with the carbon, and then decomposing it at red heat in a retort of refractory earthenware. The sulphuric acid passes into a series of bitubular flasks, containing either distilled water, carbonate of soda, or polysulphide of sodium. When sulphuric acid is no longer liberated, the decomposition is ended. The obturator of the retort is then withdrawn, and the mass, consisting of sulphate of potash and sesquioxide of chromium, is caused to fall into a cast-iron boiler, water is added and the whole is boiled to dissolve the sulphate of potash, which is afterwards separated by crystallization; the sesquioxide of chromium is placed to drain upon cloths, and then calcined to remove the water that remains. This oxide may easily be rendered chemically pure by washing it in a boiling dilute solution of carbonate of soda, thus removing all traces of sulphuric acid which had escaped the action of the pure water. The sesquioxide of chromium obtained by this process is of too dull a green to be used for printing paper or textile fabrics; but, on account of its purity, and the ease with which it may be treated, it is perfectly adapted for making bichromate of potash—*Chem. News, Feb. 26th, 1869, from Comptes Rendus.*

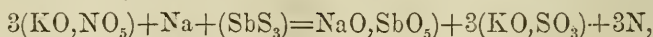
ON THE SUBSTITUTION OF SODIUM FOR PHOSPHORUS IN LUCIFER MATCHES.

Dr. H. Fleck, of Dresden, has instituted a series of experiments with the view to obtain a non-poisonous paste for the application to lucifer matches. He ascertained, by some preliminary experiments, that sodium, when minutely divided along

with explosive substances, becomes highly inflammable when simply moistened with water. A mixture, constituted according to the formula—



formed a greyish-colored mass, which, on being touched with a moistened glass rod, ignited like gunpowder; this mixture was, however, found to be unfit to ignite ordinary brimstone matches for a cotton wick soaked in petroleum. In order to mend this defect, black sulphuret of antimony was substituted for the charcoal, according to the formula—



and the mixture made up of—

0.5 grammes of sodium	=	4.65 per cent.
66.0 “ nitrate of potash	=	61.39 “
36.5 “ sulphide of antimony	=	33.96 “

Provided that during its manufacture this mixture is kept thoroughly dry, it has been found to answer admirably well. The mode of making it up is briefly as follows :—Pure solid paraffin is put into a well-stoppered glass flask, and melted over a sand bath; when fluid, clean pieces of sodium are added, and liquefied under the paraffin. As soon as the metal is thoroughly liquefied, the flask is closed and shaken for about ten minutes, which has the effect of granulating the metal, or rather reducing it to a fine powder. The metal is then poured out of the flask along with the paraffin, and the sodium taken out of the paraffin by means of a clean dry spoon; from 30 to 35 per cent. of paraffin remains adhering to the metal; this, however, does not impair its inflammability, while it tends to preserve the metal. Owing to this increase, instead of 5 grammes, 6.6 grammes of the metallic powder thus obtained must be weighed off. The incorporation with the other ingredients, previously well dried and warm, is effected under petroleum in metallic mortars, but each of the substances is first mixed with some petroleum, and pulverized separately before being triturated with the sodium; instead of gum or glue, caoutchouc, previously soaked in light petroleum oil at 110° C. for ten or twelve hours, is used as mass to form an adhesive paste with the other materials. According

to several accounts from Germany, this plan of substituting sodium for phosphorus has been favorably taken up by some of the largest and leading manufacturers of lucifer and fusee matches. There is said to be not the least danger in the transport.—*London Chemical News*, March 25, 1860. *Abridged from Deutsche Industrie Zeitung.*

NOTE ON THE SO-CALLED CARBOLIC ACID, OR COAL
TAR CREASOTE.*

BY EDWARD R. SQUIBB, M. D.

(From the Proceedings of the American Pharmaceutical Association. Revised by the author with additions and corrections, for republication in the American Journal of Pharmacy.)

The chief object of this note is to mention some recent experiments with this important substance, and some deductions drawn therefrom.

It is pretty well known that the creasote of the common market of late years has been made from coal tar, and that it consists mainly of two substances, often called carbolic and cresylic acids, in not very uniform proportions. In the process of rectifying the creasote for the markets, the portions which distilled over at a low temperature, say below 190° C., and at a very high temperature, say above 220° C., were rejected. An examination of this creasote by the light of advancing knowledge, showed that it was a complex substance, consisting mainly of two similar liquids of different ultimate composition and properties, which could be separated by the difference in their boiling points. These liquids, when examined for classification, were at first supposed to be acids, and that having the lower boiling point was called carbolic acid, from carbon and oil or the coal oil from which it was obtained. It was subsequently found to belong to the phenyl group, and was then called phenylic acid; and its congener, the other principal liquid of

* This note was intended as a supplement to an expected paper from Prof. Chandler, of New York, upon the chemical character and relations of this substance; and therefore the pure or accurate chemistry of the subject has not been developed here, but chemical properties and characteristics have only been added as required, since finding that Prof. Chandler has not had time to prepare his paper.

higher boiling point, was found to belong to the cresyl group or series of organic compounds and was called cresylic acid. Another liquid found in creasote, but in small proportion, and having a still higher boiling point, was found to belong to the xylene series, and was called xylic acid. In proportion as the rectification of the creasote rejected the higher and lower boiling point liquids, so it would contain more or less of these so-called acids, and thus would vary in its composition, and boiling point. Subsequent examination proved that these liquids were not acids at all, and their composition led modern chemists to consider them as alcohols. For some time they were classed with alcohols, and the coal tar creasote of the markets was then regarded as a mixture, in varying proportions, of phenyl-alcohol and cresyl-alcohol, with small and unimportant proportions of other organic compounds.

Still later investigations by modern European chemists appear to have established the fact that they are not alcohols. Their composition appears to be precisely that of the alcohols, and this led to the classification of them as alcohols. Further investigation of their properties and combinations shows that they do not behave at all as alcohols, though uniform with them in composition. The researches of Kékulé upon this point seem now to be generally accepted, and the difference in properties and behaviour are attributed to a different construction of the molecule from the same elements. Upon these views a class of organic compounds has been erected and called phenols, and the phenyl compound, or crystallized carbolic acid, under the name Phenol, seems to have been adopted as the type of the class, just as common ethylic alcohol is called simply Alcohol, and is adopted as the file-leader or type of the class or group of alcohols. Hence Phenol is the now accepted name for crystallized carbolic acid, or phenylic alcohol, and cresyl-phenol, or cresylol, or cresol, is the name for the cresylic acid, or cresylic alcohol. The so-called xylic acid appears to have been less studied, and its position is not known. If it be homologous with the others, and of similar construction of molecule, its condensed name would be xylol, and we should then have Phenol, cresol and xylol as the import-

ant members of this group at present known and partially investigated.*

These facts and circumstances render it unwise to learn to designate these substances as alcohols, since this would be quite as inaccurate as to call them acids; and it must be far better to keep up with the progress of science, even at the expense of frequent changes. Ascertained facts are always safe indications to change in the advancement of knowledge, but it is not always easy to discriminate between fact and fallacy.

The dark colored oily liquids met with in the markets under the name of crude carbolic acid for the lower grades, and impure carbolic acid for the better grades is this same mixture of these liquids in varying proportions, but commonly containing more or less tar, oil, etc., and is therefore in reality coal tar creasote. It is now not only inaccurate but positively incorrect to call this mixture (or either of its constituents) an acid, and the longer it continues to be so-called the more difficult it will be to change it. And as it is a very important substance now, and must come into far more important and far more general use; and as in practical general application it will probably always be a liquid mixture of these two or more phenols, there appear very good reasons for going back to the original well-constructed name of creasote for it, leaving the name "wood creasote" for the rare substance described by Reichenbach and others, which, however, has similar physical properties and is applicable to the same uses. When separated, each phenol should take its proper name, as Phenol and cresol.†

* The researches of M. Kékulé upon the Aromatic Series to which these substances belong, and the well and long known antiseptic properties of the aromatic oils in general, leads to the inquiry as to whether these may not be a natural general relation between aromatic odorous substances and septic processes. If there be such a relation, is it proportionate to the strength or power of the odor, as would seem to be indicated by the well known effects of oils of Thyme, Cinnamon, etc.?

† When *the* Phenol which stands as the type of the group of phenols,—namely, "crystallized carbolic acid,"—is intended, it is useful to write it with a capital P. But when *a* phenol is indicated, the word should not be capitalized. Such distinctions tend to accuracy of expression, and are therefore both nice and wise.

As these things grow into common use, and through science are applied to the necessities of mankind, they become objects of mercantile interest, and when taken up as sources of gain or profit, they are apt to be studied and applied with a bias directed by the pecuniary interest of the manufacturer. To the foresight and mercantile enterprise of Messrs. F. C. Calvert & Co., of Manchester, England, the world owes mainly the practical application of the scientific knowledge and research of Runge, Laurent, Williamson and others, in regard to this subject, and it became the interest of this firm to push forward those grades and forms of the substance which would best repay their praiseworthy labor, and large outlay. These grades were those which required most skill in their production, and in which they were least liable to an early competition. Phenol, or crystallized carbolic acid, being the most abundant and the most stable of the compounds which make up coal tar creasote, and, by dexterous and skilful management, susceptible of separation and purification into the condition of a beautiful white crystalline "carbolic acid," became their chief object, so that upon this all their statements were based, and toward it all their efforts tended, whilst with it all the early experiments were made, and upon it the trials in practice were based. The cresol, or cresylic acid, for some time was supposed to have little or no antiseptic or azymotic effect. As the field of labor and application enlarged, however, and particularly when the substance came to be applied upon so grand a scale as that of attempting to control the cattle plague throughout northern Europe, under the direction of such men as Mr. William Crookes and Dr. Angus Smith, of London, it expanded somewhat beyond the mercantile influences, and the cresol was shown to be equal with, if not superior, to the Phenol in azymotic effect. Taking this hint from the valuable paper of Mr. Crookes three years or more ago, the writer made some experiments upon fungi, which, though scarcely definite enough to deserve the name of experiments, convinced his judgment that the somewhat incongruous mixture of coal tar products, which, when properly separated from oils and pitch, commenced to boil at about 180° C., and distilled over below 235° C., though still containing water and impurities, was more

efficient as an azymotic than the pure crystals of Phenol. Through a small experience of two years or more, this conviction has been strengthened until the question of separating these substances and rejecting the cresol was no longer in doubt, though still not proven; and lately a series of experiments were made which have set the matter at rest in the writer's mind, and are now to be briefly referred to.

It was found, as expected, that a very dilute solution of the impure mixed phenols very promptly destroyed and detached the cryptogamous plants, which grew in the form of a green mildew upon the brown stone and drab stone fronts and areas of residences which were shaded and damp. This troublesome and unsightly defect being so perfectly and so easily controlled by the creasote, suggested that these plants would be an easy practical test of the azymotic efficacy of the phenols in solutions of various strengths. The cryptogams, as they grew upon a brick pavement in a damp place, were made the subject of the experiments, and the solutions were applied with a camel's hair pencil. In a preliminary series of trials, solutions of the impure mixture, of various strengths, were applied without apparent effect, the plants looking as green and healthy as ever on the evening of the day of the application. A shower came in the night, however, and in the morning the bricks were bare and clean wherever the solutions had been placed. It was then remembered that the destruction of the chlorophyl of plants was a kind of fermentation, and it was argued that these solutions killed the plants by their azymotic power, but by their antiseptic power had prevented the destruction of the chlorophyl, which is the common evidence of death in the green parts of plants. The plants had lost their hold with their vitality, and the rain drops had washed them away, leaving the boundary lines of contact of the solution as sharp as though made with a knife, though quite invisible the evening before after the solutions had dried off.

This little observation shows the need for a new word to express the peculiar power of this substance over vitality, and which might subserve the purposes of convenience and accuracy of expression now, when this peculiar and comparatively new

power is coming under critical investigation. Dr. Angus Smith proposes "colytic," which is a good term, but needs the natural relation to the already well established word zymotic. This relation is supplied in the French word antizymotique, which is found in Nysten's Dictionary, and is a better word, though perhaps a little less convenient than azymotic, which is proposed by the writer and used in this note. The etymology is evident, and its meaning in contradistinction to antiseptic, the nearest word to it, is well illustrated in the behaviour of these green cryptogams.

The next step in the experiments was to separate the two phenols. This was accomplished, perhaps not perfectly, but as far as could be practically useful, by fractional distillation; and the cresol thus obtained, but not dehydrated, was used in competition with Calvert's crystallized carbolic acid, thus giving an advantage to the latter. The sensible properties of the two substances are very different when critically examined, but the greatest difference is in solubility. The Calvert's crystallized carbolic acid used was, at ordinary temperatures, soluble to the extent of about 6.6 per cent. The cresylic acid, or cresol, as imperfectly isolated here, was soluble to the extent of only 1.3 per cent. at the same temperatures and by the same management. Thus the saturated solution of Phenol contained about five times as much of this substance as the saturated solution of cresol. Filtered solutions of each, containing accurately one per cent., were made under the same conditions of temperature, etc., but the Phenol had the advantage, first, because it was dehydrated, or nearly so; secondly, because it was pure and dissolved entirely, whilst the cresol was not pure, or completely separated from other soluble substances, and left an insoluble residue of at least two or three per cent. (estimated) upon the filter. The same volumes of each were, however, accurately taken, namely, 10 c. c. in the litre, the remainder being distilled water. Then 10 c. c. of each of these solutions was diluted with 90 c. c. of distilled water; and again 10 c. c. of each of these last was diluted with 90 c. c. of distilled water. These solutions then contained, respectively, ten parts in the thousand ($\frac{1}{1000}$). One part in the thousand ($\frac{1}{1000}$), and one part in ten thousand ($\frac{1}{10000}$).

These were then used for making other solutions, from which the following results were obtained.

The trials upon the lichens or cryptogams were commenced with solutions containing one-half of one per cent., or five parts in the thousand ($\frac{5}{1000}$). A single application of either had no visible effect upon the plants. By a second application of the same solutions to the same places, the plants were completely killed by the cresol, but not visibly affected by the Phenol. A third and fourth application of the solution of Phenol to the same spot produced no apparent effect. Solutions containing one per cent. were next used. A single application of this promptly and entirely destroyed the plant in the case of the cresol, but had little, if any, effect from the Phenol. In repeating the trial, it appeared possible that the younger and more feeble plants were killed by the single application of Phenol, but this was not certain. A second application to the same places killed almost all the plants when applied in localities where they were not very abundant and very vigorous. Occasional patches of the strongest plants were, however, generally left after the second application of the solution of Phenol of one per cent. A third application of this, however, cleaned them all off, apparently as clean as did the single application of the solution of cresol of the same strength.

Mixtures of the two solutions were then tried, with results which could have been predicted by calculation upon those above given.

Then the natural admixture of the phenols as they occur in the so-called impure carbolic acid, where the liquid which distils over between 180° C. and 208° C. is taken altogether, and becomes black by exposure to light and air, 80 or 90 per cent. being soluble in water. This impure mixture produced very decidedly stronger effects than the pure Phenol solution of the same strength, the effects being estimated to be nearly, if not quite, double.

These results seem to prove that the crystallized Phenol, or crystallized carbolic acid, is by far the least effective of these two chief tar products as an azymotic. But at the same time that they are very definite in regard to the fact, they are much

less definite as to the degree. All that can be considered as proved is that the cresol has more than double the azymotic power of the Phenol in its application to these mosses; but how much more than double is not shown. In searching for a more sensitive mode of comparison, the smell and taste were finally adopted, but as it was soon proved that the smell was far less delicate than the taste, the latter alone was relied upon. The taste of the two is very different. That of the Phenol is characterized by its sweetness and comparative blandness. That of the cresol is smoky, dry as opposed to sweet, and pungent, and is not instantly developed. In very dilute solution the latter has only a smoky taste. In these trials by taste it was soon found to be necessary to consult a number of persons quite independently of each other, and also to have some criterion or test of the delicacy of different tastes, so as to exclude those which were not tolerably sensitive, and it was very curious and instructive to see how this sense varies in different persons. Solutions of common ethyl-alcohol were fixed upon for this test, and it was found that comparatively few persons could recognize a mixture of one part common alcohol in ten thousand parts of distilled water; but that many would promptly detect one part in five thousand. This test served well in selecting the tastes to be relied upon, and in no single instance did cross-examination, by change and confusion of bottles, and other efforts, succeed in materially changing or interfering with the decisions made. Ten persons beside the writer were selected from many tried, and their evidence was accepted in the following results. Four of these proved upon repeated trials to exceed the others in delicacy of taste, and two were quite sensitive, making their decisions with great promptitude and certainty. These were repeatedly tried, not only upon their own conclusions, but were used to test the conclusions of others, and the different trials were made upon different days; extended over a period of many days, and were often made early in the morning, when the senses are fresh and impressible, and before the odors of a laboratory had blunted the perceptions of those occupied in it. A series of preliminary experiments and observations were made by which to learn how to conduct them, and how best to avoid the many chances of inaccuracy and fallacy. The solutions used were made with great care and accuracy from the

same phenols used for the cryptogams, namely, Calvert's crystallized medicinal carbolic acid No. 2, and the cresol imperfectly separated and prepared by the writer. Among the many persons, probably twenty, to whom these solutions were presented, only two or three failed to detect both the phenols in solutions which contained one part in ten thousand of distilled water. The whole of the ten persons relied upon detected the Phenol, or "crystallized acid," in a solution which contained one part in twenty thousand, though all did not detect it every time they were tried, and many failed to detect it when tried soon after having tasted a stronger solution. One observer only could detect the "crystallized acid" in a solution of one part in fifty thousand, and, although his testimony is unequivocal, his evidence is unsupported. No one gave the slightest evidence of taste in a solution of one part in one hundred thousand parts of distilled water. Every one of the ten persons relied upon detected the cresol in a solution of one part in one hundred thousand parts of water every time it was submitted to a fresh, clean palate for trial, and generally detected it even after other trials. Five of the ten persons easily, promptly and repeatedly detected the smoky taste of the cresol in a solution of one part in two hundred thousand parts of distilled water, and detected it so promptly as to show that this was not the limit of easy detection, although this was the most dilute solution tried. This solution is in the proportion of 1 c. c. in 200 litres, or about $15\frac{1}{2}$ grains in 52 gallons.

These results lead to the conclusion that to the ordinary sense of taste the cresol is from five to ten times stronger than the Phenol. How far this single series of experiments may be safely accepted it is difficult to decide, but their indication is unequivocal that the azymotic power in the two phenols is very different, and is in favor of the cresol in about an inverse proportion to the degree of solubility in water. That is to say, that the azymotic power of the saturated solutions is somewhere about equal, whilst the saturated solution of Phenol holds five times as much of that substance as a saturated solution of the other does of cresol. Should subsequent investigation establish any dependent relation between aromatic odorous substances and antiseptic effects, these differences between Phenol

and cresol may be usefully illustrative ; for the more feeble Phenol, when quite free from the other homologues, is, as here shown, comparatively odorless and tasteless ; and this, which has been an advertising card for it, may be, and probably is, a useful indication of inferiority. A series of experiments commenced at the end of February, 1869, and therefore as yet hardly well begun, yet appear to indicate that there is much less difference in the antiseptic value of the two phenols than in their azymotic value, and thus far exhibit a very unexpected difference in this respect. Weighed quantities of fresh meat digested with measured quantities of dilute solutions, and compared with similar proportions of meat and simple water, at temperatures favorable to decomposition, do not thus far (in seven weeks) show any marked difference in the antiseptic effect of the two phenols. The parallel solutions used were from one per cent. down to twenty-five thousandths of one per cent. (0.025 per cent.), and even the weakest of these presented a distinct contrast with the simple water during the first period of two weeks. The albumen was not visibly coagulated in solutions containing 0.5 per cent. or less, and the contents of all the vessels which contained over 0.1 per cent. dried up to smoked meat without putrefaction. It was noticed that in the very dilute solutions either the watery vapor soon carried off the phenols, or that the small amount present was used up or decomposed by the meat, since after about three weeks no sensible evidence of their presence could be detected, and the putrefaction thereafter seemed to go on with nearly the same rate of progress as with the simple water. Other series of experiments were started in flasks and covered vessels, and are to be continued through the summer, in order to control and check some already discovered sources of error, and if completed the results will be given hereafter. Whether these circumstances may be a good measure,—or a measure at all,—of their relative intrinsic value in use, is certainly not determined, though in the writer's judgment it is so very probable as to leave no doubt as to the impropriety of separating and rejecting the cresol ; and one object of this paper will have been accomplished if this point can be raised for future experience and more accurate research. In the meantime it is very obvious that

a mixture of the two phenols in the ordinary proportions in which they occur in the available products of coal tar distillations, is at least equally useful for all the known purposes to which the crystallized carbolic acid has been applied in medicine and in hygiene, whilst such mixtures are far cheaper and far more easily obtained.

These mixtures are commonly known as impure carbolic acid until they get into hands where nothing is admitted to be impure. They then take the very bad name of "*solution of carbolic acid*," and are generally so labelled. This is intended to mean liquid carbolic acid, and is very bad because it confounds this caustic and powerful liquid with the dilute solutions of it commonly required and used. The name "*solution of carbolic acid*" should never be used for the strong liquid of various shades of color commonly sold in pound bottles with a mere strip label, and it is remarkable that no serious accidents have been heard of from this common use of so bad a name.* It can be justly said that impure carbolic acid is equally inaccurate, but it is not so bad because not dangerous. A far better name would be creasote, simply, or coal-tar creasote, with the synonym, so long as this may be useful, "or carbolic acid so-called."

This liquid, as obtained from different makers, varies considerably in the proportion of the two principal phenols, and always contains at least one other homologous compound in small proportion, as well as other substances which are accidental, and also in small proportion. These variations in proportion, and accidental contaminations, when within reasonable bounds which are easily controlled by simple tests, are practically quite unimportant, and may, for the present at least, be wisely and safely disregarded in a substance so important to be promptly known and recognized in general use. When freshly distilled, this creasote is a transparent, colorless, highly refracting oily liquid, heavier than water, having a pungent, sometimes slightly sulphurous odor, and pungent caustic effect on the

* As this paper is going to press an instance is reported in a French Journal of three women affected with itch, who applied the strong liquid to the surface of their bodies by sponging. One died very soon, another, after lingering a few days, but the third finally recovered.

tongue. When exposed to the light it promptly begins to acquire color, and in twelve hours becomes of a delicate wine color of a rosy tint. From this, by continued exposure, it passes through all the shades of reddish-brown to a violet-black by reflected light, or a very deep brownish-red, or deep garnet by transmitted light. This change of color may be—in great measure, at least—delayed at any point by seclusion from light, and hence the lighter or darker color as usually met with is merely an indication that the manufacture has put it up in wrappers, etc., sooner or later after distillation. This effect of light is upon the impurities, and not upon the phenols themselves, all of these being colorless. And this mixture of them may, by repeated distillation, which is within easy practical reach of the large manufacturer, be rendered so free from these coloring substances that any ordinary prolonged exposure only produces a wine color in the mixture. This condition is desirable, and when attained, as it doubtless will be, for general sales and use, the practical limit of useful purification, even for the nicer medical uses, will have been reached, since no intrinsically better substance can be produced.

(To be continued.)

REMARKS ON SENNA.

BY T. AND H. SMITH, Edinburgh.

We have read with great interest the paper on "Senna," contributed to the Pharmaceutical Conference by Mr. Groves, and published in the October number of the Society's Journal. The subject is important and interesting in itself, and the novelty of the facts stated, and the information yielded as to the real nature of the cathartic principle of the drug, must draw the attention of pharmacutists and medical men to its value. The interest of the paper was enhanced considerably to us, by the fact that we had spent much time in endeavoring to isolate the purgative principle, and obtain it in a form capable of producing all the beneficial physiological action of the infusion, unaccompanied with the feelings of sickening and

loathing experienced by almost every one at the very thought of the drug. Whatever interest to ourselves our own labors in connection with senna may possess, we would not have thought of making them public, but for the belief that they may be of some value to others, if only by confirming, in the main, the results arrived at by the author of the paper in the Society's Journal, and those gentlemen whose works he quotes. We claim nothing that can in the least lessen the merit of these chemists, and the honor due to them for what they have so ably done.

It is now nearly thirty years since our investigations led us so far as to find that the principle of senna, upon which its cathartic action depends, could form a solid compound, which, in the dose of 4 or 5 grains, possessed all the beneficial action of a full dose of senna infusion. The method adopted by us to obtain the compound in question, was this:—The watery infusion of senna was concentrated in a good vacuum to not too thick a syrup. The extract was then wrought up with abundance of rectified spirit, which caused a separation of the gummy and other inert matters in a solid form, and, if the concentration had not been carried too far, nor the spirit too strong, the active material was entirely contained in the spirituous liquid. It was found to be of the utmost importance that the spirit should not be above a certain strength, for if attention to this point was neglected, a portion of the active principle (more or less, according to the strength of the spirit) was found in the solid matter separated. There is, however, a sure rule for knowing when the spirit is too strong or the extract too thick, and it depends on the circumstances that when an aqueous extract of senna is mixed up with too strong spirit, the separation produced by the action of the spirit forms clotty masses, instead of a more or less loose solid. When the separation forms clotty masses, the remedy is to pour off the spirit and mix in as much water, with the clots, as will completely disintegrate them. The resulting solution, or syrupy liquid, is again treated with the rectified spirit before used, and as much more as may be necessary. By this means a spirituous solution is obtained containing the whole of the cathartic principle of the senna.

The liquid thus prepared gave us the means of obtaining the compound above referred to, which is composed of a mixture of acids and other substances combined with lime, and free lime. So far as it could be tested by its action on the human frame, it contained all the active principle of the quantity of senna from which it was obtained. To prepare it, slacked lime was made into a milk and added to the spirituous solution of the extract of senna above mentioned, and the resulting precipitate on being collected by filtration, washed with strong spirit, and dried as much as possible by strong pressure between folds of blotting-paper, was found, as already mentioned, to be a powerful cathartic in the dose of 4 or 5 grains.

The denial of the solubility of the active principle of senna in strong spirit, made by Mr. Groves, is in part correct, but cannot apply to the tincture of senna of the British Pharmacopœia, as the spirituous solution which gave us the cathartic compound was, at the least, above proof, and was found by ourselves in experiments on our own persons, to have the full strength of its equivalent of senna leaves.

After reaching the length we have indicated in our researches, we were reluctantly compelled to desist making any further attempts to arrive at the end we had in view, at least for the time, but we never lost the hope of resuming our investigation under more favorable circumstances. In an investigation of the nature of the present, it is evident that wrong steps must be checked by using the human frame as a medium for testing the existence of a cathartic power in any product. In consequence of this constantly recurring necessity and the difficulty of getting or asking another person to submit to the at least disagreeable ordeal, we were led to dose ourselves to such an extent as to bring on, in one of us, a state of irritation of the whole mucous membrane of the alimentary canal, extending even to the nostrils, and the effects of which have not disappeared even to this day, so that we were compelled to throw aside the whole investigation, and it affords us much pleasure to see that it has been taken up and so well wrought out by others.—*Lond. Pharm. Jour.*, Nov., 1868.

Minutes of the Philadelphia College of Pharmacy.

The forth-eighth Annual Meeting of the Philadelphia College of Pharmacy was held at the College Hall, No. 143 North 10th st., on Monday evening, March 29th, 1869; thirty-one members present.

In the absence of the President, the first Vice-President, Dillwyn Parrish, presided. The minutes of the last meeting were read and approved. The minutes of the Board of Trustees were read by A. B. Taylor, Secretary of the Board. These minutes inform that the Annual Commencement was held March 23d, when the Diploma of the College was conferred on 48 candidates, as follows:

LOUIS A. BATES, Montgomery, Ala.....	<i>Pharmacy and its Requirements.</i>
JAMES S. BELL, Albion, Canada.....	<i>Mistura Albes Composita.</i>
HENRY K. BOWMAN, Philadelphia, Pa.....	<i>Tannin in Vegetable Astringents.</i>
JOSEPH J. CUMMINGS, Philadelphia, Pa.....	<i>Sabbatia.</i>
JAMES CRAVEN, Philadelphia, Pa.....	<i>Anilin.</i>
AARON R. DAVIS, Allentown, N. J.....	<i>The Drug Business.</i>
HENRY H. DAVIS, Crosswicks, N. J.....	<i>Erythroxyton Coca.</i>
JOHN G. DEHUFF, Lebanon, Pa.....	<i>Iris Versicolor.</i>
CHRIST. ED. EYSTER, Chambersburg, Pa.....	<i>Hamamelis Virginica.</i>
JAMES G. FRITCHEY, Lancaster, Pa.....	<i>Robinia Pseudo-Acacia.</i>
CARL FRÜH, Philadelphia, Pa.....	<i>Legislation in behalf of Pharmacy.</i>
CHARLES HAND, Burlington, N. J.....	<i>Extractum Pepp Fluidum.</i>
CHARLES E. HOLSTEIN, Norristown, Pa.....	<i>Extemporaneous Pharmacy.</i>
THOMAS J. HUSBAND, JR., Philadelphia, Pa.....	<i>The Leaves of Podophyllum Peltatum.</i>
HAMILTON HUTCHINSON, Philadelphia, Pa.....	<i>Crystallized Nitrate of Mercury.</i>
G. W. ISARD, Philadelphia, Pa.....	<i>The Leaves of Baptisia Tinctoria.</i>
D. AUGUSTUS JONES, Mount Holly, N. J.....	<i>Chelidonium Majus.</i>
CLEMENT KELTY, Salem, N. J.....	<i>Comptonia Asplenifolia.</i>
GEORGE W. KENNEDY, Pa.....	<i>Olea Fixa.</i>
C. H. KOLP, Pa.....	<i>Stillingia Sylvatica.</i>
WM. E. KREWSON, Abington, Pa.....	<i>Epigaea Repens.</i>
EUGENE LAMPARTER, Germany.....	<i>Genuine Angustura Bark.</i>
CHARLES H. MERKLEIN, Chambersburg, Pa.....	<i>The Science and Art of Percolation.</i>
WM. W. MOORHEAD, Germantown, Pa.....	<i>Prinos.</i>
AULAY W. PECK, Philadelphia, Pa.....	<i>Erigeron Canadense.</i>
STEPHEN F. PENROSE, Quakertown, Pa.....	<i>Hydrangea Arborescens.</i>
ADAM PFROMM, Philadelphia, Pa.....	<i>Animal Fats.</i>
FREDERICK H. PHELPS, Jackson, California.....	<i>Utility of Glycerin.</i>
FERRIS PRICE, Philadelphia, Pa.....	<i>Patent Medicines.</i>
MILTON RAMBO, Chester, Pa.....	<i>Lycopersitum Esculentum.</i>
CHARLES B. READ, N. J.....	<i>Suppositories.</i>
JOHN J. REYNOLDS, Chambersburg, Pa.....	<i>Annotia.</i>
WILLIAM T. RIDGWAY, Mount Holly, N. J.....	<i>Stillingia Sylvatica.</i>
HENRY E. ROBERTSON, Philadelphia, Pa.....	<i>Folia Centauree Helicis.</i>
JAMES S. ROBINSON, Philadelphia, Pa.....	<i>Collinsonia Canadensis.</i>
ROBERT C. SHARP, Pennington, Pa.....	<i>Folia Centauree Benedicta.</i>
JACOB H. STEIN, Annville, Pa.....	<i>The Model Druggist.</i>
J. SCOTT STORKS, Philadelphia, Pa.....	<i>Spigelia Marilandica.</i>
HARRY B. TAYLOR, Philadelphia, Pa.....	<i>Tabacum.</i>
L. ALPINUS TREICHLER, McKeansburg, Pa.....	<i>Benzoin in Ointments.</i>
CHARLES B. UNSICKER, Cincinnati, Ohio.....	<i>Suppositories.</i>
JARVIS R. WALLEN, Bridgeton, N. J.....	<i>Prinos Verticellatus.</i>
FRANK WARE, Bridgeton, N. J.....	<i>Xanthoxylum.</i>

SAMUEL F. WARE, Bridgeton, N. J.....*Panax Quinquifolium.*
 HARRY B. WEYMER, Philadelphia, Pa.....*An Important Question.*
 EDWIN K. WILSON, Haddonfield, N. J.....*Protoxide of Nitrogen as an Anæsthetic.*
 CHARLES WIRGMAN, Philadelphia, Pa.....*The Yellow Oxide of Mercury.*
 ISAAC G. WOLFE, Philadelphia, Pa.....*Gossypii Radix.*

The minutes of the Board further inform that a portrait of R. Eglesfield Griffith, M.D., had been presented to the College by the Zeta Phi Society; also that the Board had appointed a committee to draft a proposed law designed to regulate the sale of Poisons and practice of Pharmacy in the State of Pennsylvania.

The Treasurer's report showed a balance in his hands of \$890.86.

A series of engraved portraits had been received from Fred. Hoffman, Ph.D., of New York. The portraits, neatly framed—representing scientific men—were placed in the College Hall.

The minutes of the Board further inform that an increase in the price of the Professors tickets—matriculation and graduation fees—had been decided on by the Board, as follows:

Professors tickets, \$12.00 each; Diploma fee \$10.00; Matriculating ticket \$4.00; Matriculating ticket to students engaged with members, \$2.00.

The report of the Treasurer of the Label Committee was read and accepted.

The report of the Publishing Committee was read and accepted, and the Committee directed to publish such portion of the report as they deemed proper.

To the Philadelphia College of Pharmacy;

The Editor, on behalf of the Publishing Committee, respectfully reports that the Journal has been published regularly during the past year, extending to the 41st volume, second number. The new subscribers since last report amount to one hundred and thirty-six, (136).

The Editor regrets to say that the contributions of original observations by members of the College have greatly fallen off during the last few years, during and since the war, owing probably to greater absorption by business cares, and he earnestly hopes that an improvement in this respect will be manifested. We are constantly receiving the advantages of the observations of European pharmacutists, and it is just that we should make a return. The labor of editing is much increased by this deficiency, and at best its results are not a proper substitute for the regularly accruing observations of a number of intelligent minds engaged in the daily routine of our profession.

It is not unknown to many of the members that the brief annual reports which accompany the Treasurer's statement are the production of the Editor; in fact no regular meeting of the Publishing Committee has occurred for several years. The Treasurer of the Committee, Charles Ellis, has served the College in this capacity for more than thirty (30) years, during which period the subscriptions to the Journal have been col-

lected and the distribution of the Journal by mail and otherwise effected by the firm of which he is a member. In the early days of its existence the cost of printing and paper was much less than at present; even as late as 1846, the whole amount paid out for printing and other expenses was \$689, whilst last year the printing bills alone were 1848 dollars.

Whatever may have been the custom of the Committee in the earlier years of its history, there has been no regular organization or collective action of latter time. The accounts of the Treasurer are annually rendered and accepted, and so entire has been the confidence of the College in his disinterested action, that, so far as the Editor knows, these accounts in the long period of his service have never been audited. This has probably arisen from the independent position of the Journal and Committee outside of the Board of Trustees, and outside of the Treasury of the College. From the beginning, so far as the Editor is informed, its reverses and successes went on without disturbing the current of College finances until, in 1846, a resolution of the College was passed, directing the Treasurer of the Publishing Committee to pay fifty dollars a year to the Finance Committee, which he continued to do for fifteen years, making a gross sum of \$750. On the 25th of September, 1854, the late Prof. Thomas offered a resolution which directed the Publishing Committee to furnish the Journal to contributing and life members free of charge. This resolution was referred to the Publishing Committee to be reported on at the next meeting. At the Annual Meeting in March, 1855, the Committee reported that they were not prepared to recommend the adoption of the resolution of Prof. Thomas, and suggested a modification. This was not agreed to, and the original resolution of Dr. Thomas, amended by withholding the Journal from members in arrears, was adopted by a small majority. By this act, about one hundred of the best subscriptions to the Journal were rendered unavailable to its treasury. Notwithstanding this large draft on their resources, the Committee continued to report an increasing annual balance in its favor, so as to be able, in 1858, to contribute \$150 towards repairing the College Hall. This flourishing condition continued until 1861, when the balance in favor of the Committee was \$325.27, when the breaking out of the war suddenly reduced the amount of collections nearly six hundred dollars, and compelled the treasurer to report a reversed balance against the Committee of \$229.41. In 1862 though there was an increase of collections, this reversed balance continued to be \$206.50. In 1863 it increased to \$325.47. At this juncture the Treasurer of the Publishing Committee was authorized, by resolution of the College, to draw on the Latin Label Committee for the amount of the deficit. In 1864 the Treasurer reported a balance due the Committee of \$347.73; in 1865 this balance was reduced to \$223.87. At this period, after the close of the war, we all remember the large accession to prices incident to taxation, and the consequent rapid rise in the value of labor which reached into every department of trade and production. But what more specially crippled the

finances at this time was the unprecedented rise in the value of paper, all of which influences compelled the Treasurer to report in March, 1866, a reverse balance of \$194.38. The printers bill, which in 1864 was \$947.25, increased in 1865 to \$1216.00, in 1866 to \$1686.07, in 1867 to \$1768.87, and in 1868 to \$1848.78, as has been stated. In consequence of this increased expenditure, notwithstanding a large increase in the subscription list, the balance due the Treasurer in 1867 was \$367.93, which increased to \$570 in 1868, in March last, when the Treasurer was again authorized to draw on the Label Committee for that amount. It is proper to state that the edition, which in 1861 was twelve hundred, in 1865 had gradually been reduced to nine hundred, and now has increased to fourteen hundred. We have now come to the current year ending with the meeting to-night. In November last, on the return of the Treasurer, after a long absence, the payments had been so tardy that the accounts showed a balance against the Committee of \$375, with printing bills for nearly seven hundred dollars awaiting payment. Earnest measures were immediately taken by the Treasurer to promote the collection of subscriptions due the Committee, and the Treasurer's report, to be read presently, will exhibit how well his efforts have been rewarded, by showing a cash balance in favor of the committee of \$34.88, the collections since November last amounting to more than \$1900.

In taking a retrospective glance at what has been said in this report, it will appear, *firstly*, that within the last thirty years the Journal has received no aid directly from the College treasury; *secondly*, that it has received aid on two occasions, by order of the College from the funds in the hands of the Treasurer of the Label Committee, amounting to \$930.80; *thirdly*, that during the same period and at various times when the College needed aid, the Treasurer of the Publishing Committee paid into the treasury of the College \$900 in cash; and within the last fourteen years has furnished to members about fourteen hundred volumes, the subscription value of which amounts to more than \$4200. In view of these facts, it is believed to be a reasonable expectation, when such difficulties again beset the Journal as have assailed it during the past eight years, that the College should pay the Committee for the subscriptions of members. It has been the desire of the Committee generally, and of many members of the College, to have the business of the Journal transacted at the College Hall by a competent actuary having this and other duties; but as that is not possible at present, the Treasurer has agreed to continue his exertions as regards the financial and distributional departments of the Committee until the Publishing Committee may deem it for the best interests of the journal to adopt another plan.

WILLIAM PROCTER, JR.

March 29th, 1869.

The Committee on Ways and Means reported progress. The resignations of A. T. Hazzard and John C. Savery were read and accepted; the resignation of Mr. Hazzard to take effect from its date, Sept. 25th, 1868.

On motion of Ambrose Smith, Mr. Savery, was allowed to retain his certificate of membership. The Treasurer was directed to notify all members in arrears that their names were liable to be stricken from the roll.

The following communication from the County Medical Society was read :

" At a meeting of the Philadelphia County Medical Society, held on Saturday evening, March 20th, 1869, to consider the bill before the State Legislature, to prevent the adulteration of drugs, a resolution was adopted that a committee of five be appointed to confer with the Druggists upon the subject. The committee appointed consists of Drs. S. D. Gross, L. P. Gebhard, Geo. Hamilton, J. G. Stetler and Robert Burns. The Assistant Secretary was instructed to notify the College of Pharmacy of such meeting, and of the appointment of such committee, likewise to request the College of Pharmacy to appoint a similar committee, and to name the time and place of meeting of said committee.

Signed,

L. S. BOLLES, 1609 Spruce St.,

Assistant Secretary.

On motion, the Chair appointed the following committee to confer with the committee of the County Medical Society :

William Procter, Jr., A. B. Taylor, Edward Parrish, John M. Maisch, Charles Bullock.

A. B. Taylor stated that, as one of the Secretaries of the meeting of Druggists lately convened, he had sent a copy of the resolutions of said meeting to the Secretary of the County Medical Society, but as the Secretary was not present at the last meeting, the resolutions were not presented.

On motion of Robert Bridges, M.D., it was resolved that when this meeting adjourns it will adjourn to meet this night two weeks.

A resolution was adopted authorizing the Committee on Ways and Means to borrow five thousand dollars on a mortgage of the College premises, to enable the Building Committee to settle in full the debt incurred in building and furnishing the College Hall.

The following communication was read :

PHILADA., 3mo. 29, 1869.

To the Members of the Philadelphia College of Pharmacy :

ESTERED FRIENDS.—Deeply interested as I have always been in the Philadelphia College of Pharmacy, having been connected with the institution from its origin, now nearly forty eight years ; and having served you during long periods as Secretary and as President—positions which you voluntarily bestowed upon me, and which may be viewed as evidences of your confidence and regard ; I am unwilling to sever the relation in tendering my resignation of the Presidency of the College, without conveying to you the assurance of my kind feelings, and expressing my cherished recollections of the enjoyment derived from so many years of associated labors with my friends.

In withdrawing from active labor in the College, it is with much satisfaction that I reflect on the excellent accommodations its new Hall provides for the varied objects of our institution.

The erection of such accommodations has necessarily caused the expenditure of a large sum of money. I may be permitted to allude to the

importance of making an early provision, by means of a sinking fund, for its gradual extinction.

With sincere regard, I remain your friend,

CHARLES ELLIS.

After due deliberation it was moved and adopted that the request of Charles Ellis, declining re-election as President of the College, be acceded to; and the following minute was made, expressing the sense of the College in parting with its old and highly esteemed officer:

"Our retiring President was one of the original members of this College—but few of whom now remain in our midst. He has seen this institution progress from infancy to the maturity and vigor of a well developed and useful organization. For fourteen years he served as Secretary, and for fifteen years was presiding officer of this College. In retiring from active duty he has our grateful remembrance of his services—our hopes that his counsel and his interest in our institution will remain with us, and our best wishes for the future of his life."

The annual election being ordered, Caleb H. Needles and S. Mason McCollin, as tellers, reported the election of the following officers:

<i>President,</i>	Dillwyn Parrish.
<i>1st Vice-President,</i>	William Procter, Jr.
<i>2d Vice-President,</i>	Robert Shoemaker.
<i>Treasurer,</i>	Ambrose Smith.
<i>Recording Secretary,</i>	Charles Bullock.
<i>Corresponding Secretary,</i>	Alfred B. Taylor.

Trustees.

Robert Bridges, M. D.,	T. S. Wiegand,	T. M. Perot,
Danl. S. Jones,	John M. Maisch,	James T. Shinn,
Saml. S. Bunting,	Charles L. Eberle.	

Publishing Committee.

Charles Ellis,	Edward Parrish,	Alfred B. Taylor,
John M. Maisch,	Wm. Procter, Jr.	

Committee on Sinking Fund.

Thomas S. Wiegand,	T. Morris Perot,	James T. Shinn.
--------------------	------------------	-----------------

Delegates to American Pharmaceutical Association.

James T. Shinn,	S. Mason McCollin,	Wilson H. Pile, M. D.
Wm. Procter, Jr.,	Alfred B. Taylor.	

On motion, then adjourned.

CHARLES BULLOCK, *Secretary.*

An adjourned meeting of the College was held on the evening of April 12th, 1869, at the College Hall, pursuant to adjournment. The President, Dillwyn Parrish, in the Chair. 31 members present.

The Committee of Ways and Means made their final report, which was accepted and referred to an Auditing Committee, consisting of Jacob L. Smith, Wilson H. Pile, M. D., and Caleb H. Needles.

From this report it appears that the whole amount received for the Building Fund was

\$34,844.08

From the following sources :

Sale of College on Zane street,	\$15,000.00	
Cash from Treasurer of College,	874.89	
Refunded by Gas Company,	126.35	
Contributions,	8,655.50	
Borrowed on mortgage,	5,000.00	
“ “ scrip,	5,000.00	
Interest received,	187.34	
	<hr/>	\$34,844.08

The whole amount expended by order of Building Committee,
\$34,649.98

Balance due College, and subject to order \$194.10

The Committee having fulfilled the object of their appointment and exhibited a detailed statement of their receipts and expenditures, ask that Auditors be appointed to verify their account.

Signed

DILLWYN PARRISH, *Chairman.*

THOMAS S. WIEGAND, *Secretary.*

The balance of \$194.10 was directed to be placed to the order of the Hall Committee.

On motion of E. Parrish, the collection of outstanding subscriptions was referred to the Committee on the Sinking Fund.

A resolution was adopted directing the President and Secretary to issue an order or warrant for the amount of the unexpended balance of the legacy of A. S. Roberts, loaned to the Committee on Ways and Means in accordance with a resolution of the College adopted Sept. 28, 1868.

Richard Walmsley, Israel J. Grahame and Charles Eugene Haeneher were elected resident members of the College.

On motion of Edward Parrish, it was moved and adopted that the College elect a Solicitor. Albert S. Letchworth, Esq., being nominated, and an election ordered, Mr. Letchworth was unanimously elected.

On motion of Alfred B. Taylor, the following Committee was appointed to revise the By-Laws of the College, viz.: A. B. Taylor, William Procter, Jr., T. S. Wiegand, James T. Shinn, Charles Bullock.

On motion of A. B. Taylor, it was resolved, that when we adjourn we adjourn to meet on Monday evening, May 10th.

Wm. Procter, Jr., on behalf of the Committee appointed to meet the Committee of the County Medical Society, made a verbal report that a meeting was held, and a free expression of views given by physicians and pharmacutists relative to the proposed legislation to prevent adulteration in drugs, which resulted in unanimously advising delay until the next session, to give time for the preparation of a proper law. It was also resolved to request the College of Physicians to appoint a Committee to represent that body in the conference.

The names of seven members in arrears were directed to be stricken from the roll of the College.

This being the time for the appointment of a committee to effect a

preliminary Revision of the United States Pharmacopœia, to be sent by our delegates to the Decennial Pharmacopœia Convention of 1870, as the contribution of this College, the following members were appointed:

Alfred B. Taylor,	Edward Parrish,	William Procter, Jr.,
Charles Bullock,	James T. Shinn,	Ambrose Smith,
T. S. Wiegand,	Chas. L. Eberle,	Wilson H. Pile, M. D.
Henry N. Rittenhous,	Charles Shivers,	Israel J. Grahame,
	John M. Maisch.	

On motion, then adjourned.

CHAS. BULLOCK, *Secretary*.

Editorial Department.

LEGISLATION FOR PHARMACY IN PENNSYLVANIA.—During the two months which have elapsed since our previous article with this caption was penned no progress has been made by the Legislature in carrying out the unjust scheme of law which originally emanated from a committee of the State Medical Society, unjust because oppressive, not reaching the object aimed at, and insulting to the respectable body of Druggists and Pharmaceutists of Philadelphia, who, though to be subjected to the rigorous annoyances of the law, were in no wise consulted in its creation.

In saying this it is with no intention of reflecting unjustly on the State Medical Society as a body, which, deeming the profession to be suffering in its usefulness by adulterated medicines, authorized a committee to memorialize the Legislature to appoint an inspector of drugs and to make drug adulteration a misdemeanor. We believe its committee to have been a very unfit one, and, profiting by the results of the crusade it has carried on against the druggists and apothecaries through the Legislature and a portion of the public press, we earnestly hope the State Society will hereafter have the justice and courtesy to apprise the College of Pharmacy of their intentions before they thus assume to legislate for the druggists and pharmaceutists of Philadelphia.

Pending the existence of the second bill, a meeting of the druggists, pharmaceutists and manufacturing chemists of Philadelphia was called by the Secretary of the College of Pharmacy, and met on the evening of March 16th, at the hall of the College. The meeting was organized by appointing Robert Shoemaker, *President*; Thomas H. Powers, Charles Ellis, Mitchel J. Rosengarten, W. Procter, Jr., T. Morris Perot and Wm. C. Henszey, *Vice-Presidents*; and Alfred B. Taylor and Wm. J. Jenks, *Secretaries*.

The Chairman opened the meeting by a brief history of the legislation, and its relation to the druggists of Philadelphia, concluding his remarks by presuming that none were opposed to the appointment of a proper person for inspector of drugs, but he should like to hear a free expression in regard to the matter.

Prof. Parrish explained that apothecaries desired a suspension of legislation in order that time might be had to perfect a bill now in the hands of a committee of the American Pharmaceutical Association. He objected to hasty legislation and believed mature deliberation necessary. A committee of the Trustees was now co-operating with the other committee, and two members had gone to Harrisburg and represented to members of the Legislature the position of the College of Pharmacy and druggists generally in the case, and why they wished delay. He had prepared a series of resolutions designed to represent the sentiment of the meeting, if approved, and also had a copy of the bill of the Association as modified in joint committee. At this juncture the reading of the objectionable bill (see page 183 of last number) was called for, and it was read. Prof. Parrish now read the other bill, based on that of the Association, and which was yet incomplete. This bill does not include a section relative to adulterated drugs, but aims at the registration of all retail dealers in poisons and drugs at present existing, and provides that no persons shall hereafter be registered unless they shall have undergone a successful examination by a properly authorized examining board. It also regulates the sale of poisons, a schedule of which is annexed, and excepts country physicians who keep their own medicines.

A discussion now ensued, during which several speakers rambled from the point at issue, but all agreeing that the bill before the Legislature was objectionable. Prof. Parrish offered the following preamble and resolutions:

Whereas, There is an obvious necessity for the enactment of laws to regulate the selling and dispensing of medicines and poisons, to promote the education of experts fitted to assume those delicate and responsible duties, and thus to suppress the adulteration and sophistication of drugs and medicines; *and whereas*, those only who by education and experience are acquainted with the difficulties of the subject are competent to frame laws for the promotion of these desirable objects:

1. *Resolved*, That the safety of the public demands that it should be unlawful for any one to sell medicines by retail, or to compound the prescriptions of physicians, without being first examined by a competent board of examiners as to his fitness to judge of and test the qualities and genuineness of drugs and chemicals, and to mix, combine, and dispense these according to the well-established principles of pharmaceutical science.

2. *Resolved*, That the sale of substances dangerous to human life should be especially restricted by law, and connected with precautions calculated to insure against mistakes, and to lead to the detection of any cases of accidental or criminal injury or homicide.

3. *Resolved*, That "The Pharmacy and Poison Act," prepared and now in course of revision by a committee of the American Pharmaceutical Association, with a view to procuring uniform legislation in all the States of the Union, in its leading features merits our approval, and we ask for it, when perfected by further comparison with the laws of foreign countries, and by consultation with leading pharmacutists in this and other States, the careful consideration of the Legislature and of the community for whose benefit and protection it is designed.

4. *Resolved*, That the adulteration and sophistication of medicines is an evil only partially reached by the special examination provided for by the United States Government at the several ports of entry, and by the vigilance of the several pharmaceutical colleges and associations, and any just and practical laws which can be devised for its suppression shall have our earnest and hearty support; yet we look to the more general cultivation and spread of pharmaceutical science, and the more thorough professional education and organization of dealers and compounders of drugs and medicines as the surest guarantees of the purity and efficiency of remedial agents.

5. *Resolved*, That we have no confidence in either of the bills recently introduced into the Legislature of Pennsylvania, the one looking toward the appointment of a State Inspector of Drugs, and the other authorizing summary processes for searching pharmaceutical stores, and the arrest of their owners at the instance of irresponsible informers, as neither law would, in our judgment, prove sufficient or useful, while the latter especially would lead to endless annoyance and petty litigation.

The resolutions were seconded by Dr. Reid, and unanimously adopted.

Dr. Reid believed that druggists should co-operate to secure uniformity in prices; that they should repudiate the giving of per centages to physicians.

Ambrose Smith thought that very few instances of physicians receiving per centages existed.

The President did not think any respectable physician would accept it.

G. W. Vaughan said this practice of giving physicians a per centage was common in his district. He believed it a great evil and a growing one, and said that he could name physicians who received per centages that would surprise the meeting.

Prof. Procter recalled the attention of the meeting to the alleged adulteration of drugs. It would be satisfactory to him if gentlemen present would freely express themselves in regard to the feasibility of a law to prevent adulteration. He believed there was adulteration in drugs, but a much greater adulteration in pharmaceutical preparations.

Prof. Parrish believed roguery in drugs would be reached more effectually through the ethical rules of organized bodies, and especially by a law of registration, to give character and standing to our profession, than by criminal prosecutions.

Dr. Stetler, a member of the medical profession, was present from his interest in the subject, and hoped there would be no antagonism with physicians in the matter of the proposed drug law. He gave a brief history of its origin, and claimed that the State Medical Society only wanted to get pure drugs. He hoped that both professions would unite in getting a proper law that would reach the evil.

Charles Ellis approved of co-operation with physicians, but counselled delay till next year to mature action.

Mr. Bullock had a high regard for physicians, but did not see in what they should be consulted in regulating the drug trade, a matter which he deemed beyond their province. The law, in his opinion, should emanate solely from druggists and pharmacists.

Others corroborated this view, when, after some further debate, on motion of James T. Shinn, it was ordered that a copy of the resolutions adopted above be sent to the Philadelphia County Medical Society, to the College of Physicians, and to the Chairman of the Judiciary Committee of the Legislature.

On the 20th of March a special meeting of the County Medical Society was held at the hall of the College of Physicians in reference to the bill for the prevention of the adulteration of drugs, a full report of which appeared in one of the public papers on Monday, the 22d. Dr. Knight, President, in the Chair.

Dr. Cummiskey, author of the first bill for a State Inspector, opened the debate by a short history of the defeat of the first bill, which he attributed to the druggists, and referred to the bill of Mr. Rogers (the second bill), which was read.

Dr. Stetler objected to the bill, as not providing for an inspector of drugs.

Dr. Cummiskey replied that the law could not be passed with an inspectorship.

Dr. Stetler asked whether the State Society had given the committee discretionary power to ask a bill without an inspectorship. He thought not, and he objected to the making it the duty of physicians to be spies and informers on the druggists. With this provision he doubted its efficacy, as not one in ten thousand would perform the service. He had attended the meeting of druggists the other evening, and found a willingness to have a law relative to adulterated drugs, but that they objected to both bills that had been read, and especially to the harsh manner in which they had been treated by the Press newspaper.

Dr. Cummiskey did not believe that it would do to join with the druggists and ask a bill of the Legislature, as no bill could be offered that would be acceptable to them and to physicians.

Dr. O'Hara then read a preamble and resolutions which reflected on the druggists for offering any law for abating adulteration, which sustained the action of the State Medical Society, and invited the people to side with the medical profession to urge the passage of the bill.

Pending a vote being taken, Drs. Stetler and Hamilton advised co-operation with the druggists, in which a majority concurred.

The bill was again read, by request, when Dr. Burns, of the Army, made a speech approving the bill, except that there was no agent to carry it out. He wanted a controlling power to enter the laboratory and see what the manufacturing chemist is doing, to see how he is making his quinine and morphia, and whether all is right that goes into them. So, also, the herborists who supply our indigenous herbs and roots should be looked after. The law would be a failure without some such power. In fact, Dr. Burns was for putting the axe to the root of the tree; but it is greatly to be feared that when he sets out to do it he will have as much difficulty in finding the root as he will in applying the axe.

Dr. Cummiskey agreed with Dr. Burns in the main. He thought the bill before the Legislature was the best that could be obtained, and much better than none. The druggists know we differ in opinion, which is the reason they meet and express themselves with the effrontery which they have done.

Prof. S. D. Gross, being asked his opinion, advised co-operation with the druggists by appointing a committee to confer with a similar committee from the College of Pharmacy. If they refuse to act with us, then let physicians take the matter in their own hands. There are as many respectable men among the druggists as there are among physicians, and they could not presume to "wilfully and knowingly" impose on the community and the profession.

Dr. John Bell did not approve of co-operation with druggists. He took high ground as to the rights of physicians to be served with pure medicines, and did not believe the apothecaries would cordially co-operate. In reference to the bill, he saw the difficulty of fixing the charge of "wilful and knowing" adulteration on an apothecary by evidence, and the function of an informer, even when the motives were pure, was objectionable.

Dr. Stetler believed that the druggists were not hostile to legislation on this subject, in evidence of which he asked the Secretary to read one of their resolutions. They have no confidence in either of the bills heretofore brought forward, as impracticable and oppressive. He urged joint action as being more likely to result in proper inspection and the registration of pharmacutists. He thought very few were competent to act as inspectors, perhaps not half a dozen in this city, as none but a first-class analytical chemist is competent. He was in favor of conferring with eminent druggists, and jointly going to Harrisburg to get a law.

The resolution No. 4 of the druggists was now read, when a vote was taken on Dr. O'Hara's resolutions. Yeas 4, nays 10.

Dr. Stetler proposed a committee, which was agreed to, and after some discussion the number fixed as five, when the President appointed Prof. Gross, Dr. Gebhard, Dr. Hamilton, Dr. Stetler, and Dr. Burns, to act as the committee, and the Secretary was directed to apprise the College of Pharmacy that such a meeting had been held, and to request that they appoint a similar committee.

The second bill, referred to in the two meetings above, was withdrawn by the mover, and a third bill, limited in its action to the City of Philadelphia, substituted for it and read in place. This proved to be the most objectionable of all, as, in addition to the previous sections relative to the adulteration of drugs, it contained the following section:

SECTION 2. That the proprietor of any store, dispensary, laboratory, or establishment, situate in said City, who shall employ any person not a graduate in Pharmacy to compound or admix any drugs or medicinal preparations, for prescriptions or retail sale, shall be deemed guilty of a misdemeanor, and on conviction thereof shall forfeit and pay to said City a penalty not exceeding two thousand dollars, together with costs of prosecution.

This law carried out would shut up half the stores in town, some among the first in reputation, which, from the system of apprenticeship long in vogue in Philadelphia (and which has done more to furnish good apothecaries than any other course), would have rendered the proprietors unable to comply with the law. Where will the next generation of apothecaries get their tuition, if they are not to be taught in the shop and laboratory, under the supervision of the proprietor and his qualified assistants? It is an absurdity, like requiring a child to learn to swim without going into the water, and strikes at the very root of progress in skill and knowledge.

As soon as its character became known the bill was printed and distributed, and a committee sent to Harrisburg to explain its absurdity and impracticability, and a large meeting of prominent pharmacutists, druggists and chemists met by call at the house of Mr. Charles Ellis, to deliberate on what should be done. After considerable discussion, the draft of a bill prepared by one of the members was read, some additional clauses added, so as to include the regulation of the sale of drugs and poisons, by requiring all who now sold them to be licensed, and requiring all future pharmacutists beginning in Philadelphia to be either graduates, or to have had a special examination by the College of Pharmacy. The intentional adulteration of drugs was made a misdemeanor, punishable by a fine of \$500, and the sale of adulterated drugs, knowingly, by a similar penalty. The second section of the third bill (above quoted) was substituted by the following:

SECTION 2. That no person not a graduate in Pharmacy shall be allowed by the proprietor of any pharmaceutical store to compound or dispense the prescriptions of physicians, except as an aid under the immediate supervision of said proprietor or his qualified assistant, unless he has been at the business at least two years, and has attended one full course of lectures in the Philadelphia College of Pharmacy, and no proprietor shall leave his store with any but a qualified person.

This draft was printed, an interview had with Mr. Rogers, of the House of Representatives, who had brought out the objectionable bill, and its provisions carefully explained. On returning to Harrisburg Mr. R. had bill No. 3 recommitted to the judiciary committee. He was told that the bill prepared by the druggists was only intended for passage in case the alleged pressure on the Legislature required them to pass some bill, but that it was the desire of the College of Pharmacy and the druggists generally not to pass any bill this session, so as to give time to mature a bill properly and wisely to embrace drugs, poisons, education and registration.

Meanwhile, at the annual meeting of the College of Pharmacy, on the 29th of March, the resolution of the County Medical Society was read, considered, and a committee of five, consisting of Messrs. Procter, Parrish, Maisch, Taylor and Bullock, were appointed to meet the committee of the County Medical Society, when they should appoint the time and place.

On Saturday evening, April 10, the committees of the County Medical

Society and the Philadelphia College of Pharmacy met at the hall of the College of Physicians. Prof. Gross was invited to take the chair, and Prof. Parrish was appointed Secretary. The Chairman stated that the object of the meeting was known to all present to be in relation to getting at some means to prevent the adulteration of drugs. After a free and candid expression from the members of both committees it was suggested that the document issued by a former joint committee of the two bodies now represented be read from the American Journal of Pharmacy for 1852, which seemed so satisfactorily to regulate the relations between the two professions. The bill prepared by the pharmacutists as a substitute for the bill before the House, at Harrisburg, was read, and satisfied the medical gentlemen that the druggists were not disposed to avoid legislation, but wanted time to prepare carefully a wise and comprehensive act. The physicians and apothecaries entirely agreed in this view, and decided to use the influence of the joint committee to postpone legislation for this session, to invite the co-operation of the College of Physicians, and make an effort to be prepared with a suitable law to be presented to the next Legislature.

All these influences combined, and especially the candid representation by the apothecaries of its practical working, prevented the passage of the proposed law, and the Legislature has now adjourned.

The bill of the Association is applicable to the entire State. The temper of the Legislature will render it extremely difficult to obtain any such law, and it will be wise in our College to keep the subject alive and secure a proper bill for this City, and trust to the future to extend its provisions to the State.

THE GYNEOLOGICAL SOCIETY OF BOSTON has been instituted during the present year, for the purpose of promoting a knowledge of the diseases of women and the proper treatment for them. *President*, Winslow Lewis, M.D.; *Treasurer*, Geo. H. Bixby, M.D.; *Secretary*, Horatio H. Storer, M.D. One of the objects of the Society is to create a library of works on the art and science of Gynæology.

NEW YORK COLLEGE OF PHARMACY—At the Annual Meeting of this Institution, held March 18th, 1869, the diploma of the College was conferred upon the following graduates:

Thomas J. Covell,

George A. Evans,

William Neergaard, Jr.,

George W. C. Phillips.

The following officers were elected for the ensuing year:

President, George C. Close; *Vice-Presidents*, William Neergaard, John Milhaa, Arthur W. Gabaudan; *Treasurer*, Wm. Wright, Jr.; *Secretary*, P. W. Bedford; *Trustees*, Henry A. Cassebeer, Jr., Isaac Coddington, John W. Shedden, Theobald Frohwein, Adolph G. Dunn, Augustus W. Weismann, David Hays, Edward L. Milhau, John Frey.

Delegates to attend the Chicago meeting of the American Pharma-

ceutical Association, Sept. 7th, 1869—P. W. Bedford, Isaac Coddington, Max Frohwein, A. W. Weismann, William Wright, Jr.

From the Treasurer's report it appears that unusual efforts have been and are being made to promote the interests of the College, and incidentally we learn that there is a prospect of Dr. E. R. Squibb, giving a course on Practical Pharmacy next winter. Should this be carried out, we feel no doubt but that his effort will prove highly useful to the N. Y. School of Pharmacy.

List of the Contributors to the Building Fund for the New Hall of the Philadelphia College of Pharmacy. (Continued from Page 182, of this volume).

John Goodyear, (additional)	\$20 00	Cash,	\$25 00
Lippincott & Son,	5 00	C. N. Dalrymple,	15 00
Allen Shryock,	3 00	Zeta Phi Society, 1869,	50 00
R. Nebinger, (additional)	25 00		
Richard Peltz,	100 00		\$ 323 00
E. McC. Boring,	10 00	Previously,	8022 50
Geo. C. Bower, (additional)	25 00		
Alfred Wiltberger,	25 00	Total contributions,	\$8350 50
Wm. Evans,	25 00		

The Probe; an inquiry into the use of stimulants and narcotics, the social evils resulting therefrom, and methods of reform and cure. By Joseph Parrish, M.D. Issued quarterly from the Sanitarium, Media, Pennsylvania, price one dollar per year; pp. 32, octavo.

This new journal, commenced in a good cause, deserves success. We believe there is a perennial supply of material for its pages, and trust that the editor may be liberally encouraged to proceed.

Catalogue of the officers and students of the University of Michigan for 1868-9, with a general description of the University. Ann Arbor; published by the University, 1869; pp. 79.

The extensive operations of this Institution are well shown by a glance over its catalogue of students in the several departments of science literature and the arts, of law, of medicine, of engineering and of pharmacy. The latter branch of this school we have before alluded to, and consists of lectures on chemical physics, inorganic and organic chemistry, toxicology and materia medica, recitations and lectures on practical pharmacy, with systematic instruction in analysis and practical pharmacy. The latter department is under the direction of Prof. S. H. Donglass. During the prosecution of this course students are admitted to the classes in botany and Latin, French and German, if properly prepared to enter. The time required for the pharmaceutical course is from one and a half to two years, and at its terminus those who pass satisfactory examinations and submit an acceptable thesis, will receive the diploma of "pharmaceutical chemist."

Annual Report of the U. S. Commissioner of Agriculture for the year 1868. Washington, D. C., pp. 18, octavo. (From Dr. Toner.)

This report consists of a few general remarks under various heads, among which are "agricultural education," "international exchanges," "cattle diseases," "grapes and wine," "cinchona planting," chemical laboratory for analysis, "entomology," the museum, garden and arboretum, and distribution of seeds.

We learn from the report that a system of international exchanges has been established with several of the governments of Europe, Asia and South America, and that valuable exchanges have been arranged for with the directory of Kew Gardens, the Garden of Melbourne, in Australia, and other places. The tropical and subtropical fruits are being introduced on trial into Florida, and the culture of cinchona is advocated. The chemical department of the patent office has been re-modelled, to be placed in the new building, now nearly completed, for the accommodation of the department of Agriculture, and from the report we judge that the new laboratory will be fitted up in accordance with the modern improvements in the experimental laboratories of Europe. From the tone of the report we must infer that the organization of the laboratory is not yet complete as regards the objects to which it is to be devoted. The idea of testing soils, manures, and even carrying on chemico-physiological researches in connection with questions in agriculture, may all be appropriate, but the *system* under which the work is to be prosecuted should be well digested and clearly defined before starting, that its action may be limited to its legitimate channels, and not become subservient to private interests. For instance, inquiry into the best chemical remedies for the cattle plague, or for destroying the mildew in the grape, or for the preservation of timber etc., would be quite proper, because of general utility, whilst specimens of soil for analysis from the plantations of Congressmen A, B and C would be illegitimate employment for government chemists, unless in some way connected with experimental culture for the general benefit.

Half Yearly Compendium of Medical Science.—A synopsis of the American and foreign literature of Medicine, Surgery and the Collateral Sciences for six months. Edited by S. W. Butler, M.D., and D. G. Brinton, M.D. Part 3. Jan., 1869. Phila., S. W. Butler, 115 south 7th st., 1869; pp. 336, octavo. Price \$3 per annum.

The authors feel encouraged at the success which has attended their enterprise thus far. "This number contains nearly 400 articles, collated from nearly 250 American and 230 foreign writers and speakers." The statistics of opium poisoning and other branches of toxicology are well worthy of examination.

Maw & Son's Quarterly Price Current of Surgeon's Instruments and appliances, also the apparatus, implements, utensils and other requisites employed in pharmacy, the dispensing of medicines, &c., &c.

Also *Book of Illustrations* to Maw & Sons Quarterly Price Current. London, 11 and 12 Aldgate street. 1869; pp. 344.

THE
AMERICAN JOURNAL OF PHARMACY.

~~~~~  
JULY, 1869.  
~~~~~

THE PHARMACOPŒIA OF 1870—SHALL ITS AUTHORITY BE
MORE GENERALLY RESPECTED?

BY WILLIAM PROCTER, JR.

In May, 1870, the next decennial convention of delegates from the incorporated medical and pharmaceutical bodies of the United States, meets in Washington for the purpose of taking the usual measures to effect the fifth revision of the Pharmacopœia. It is of great importance to both physicians and pharmacutists that this revision should be wisely considered and thoroughly executed, so that the pharmacopœia may command the respect and recognition in practice so necessary to its usefulness. In the absence of any legal power to compel the adoption of its formulæ, it is worthy of the earnest consideration of the medical profession and of all well informed pharmacutists to devise some plan by which a more general recognition of its authority may be effected. Forty years ago, before the edition of 1830 was published, apothecaries, even in Philadelphia, used their private manuscript "receipt books" for most of the leading preparations. Now the pharmacopœia or its commentary, the U. S. Dispensatory, is found in every shop. Nevertheless there is a disposition on the part of many to depart from officinal rules, when to obey them is more troublesome or more expensive than some short cut process that they may have devised. This deviation in reference to chemicals of a positive composition, as calomel or tartar-emetic, for instance, is less objectionable,

because the result is the same ; but in what are called the galenical preparations, as extracts, fluid extracts, tinctures, syrups, etc., this deviation often so alters the appearance and composition of the results as to cause doubt and distrust on the part of well informed physicians.

The *first step* toward a reform in this matter is to make the Pharmacopœia of 1870 as nearly perfect as it is possible. Let its formulæ—especially those most certain to be used by the dispensing pharmacist—be marked for the simplicity and directness of their manipulation, and for the excellence and attractive appearance of their results, when these qualities are not incompatible, always giving the preference to intrinsic rather than apparent value.

The *second step* must be taken by physicians in their society capacity chiefly. The American Medical Association is the medical body best able to exert a universal influence within our national boundaries in promoting the practical recognition of the United States Pharmacopœia. That Association meets the same week in the same city with the pharmacopœial convention, and now united, north and south, will be in the best condition to exert a lasting influence on the future standing of the pharmacopœia, by lending its entire influence in favor of official preparations made by official formulæ. This may be done, *first*, by declaring its convictions in a few well drawn resolutions directed to its members, and *secondly*, by urging forcibly on the attention of each of the subordinate state and county medical societies to examine the new edition when published, through a competent committee, recommending their members to become acquainted with its official names and new preparations, and to refuse to prescribe A. B. & C.'s preparations, which profess to be better, until the official have been found wanting.

It is often said that medical men are easily persuaded into using medical novelties—that advertising is the true secret of getting up the reputation of medicines among the physicians. This idea is so well known to manufacturers that instances occur of their publishing journals at nominal prices in order to advertise their products. It therefore appears to be true, however

humiliating it may be to the medical profession, that many of its members are "lead by the nose" through the agency of quick-witted advertisers on the covers of medical journals, and in circulars and pamphlets. The remedy for this evil is better professional education—better acquaintance with the *materia medica*—better knowledge of the preparations of the pharmacopœia by actual inspection, so as to be able to tell, as far as sensible properties permit, what their patients are getting. We don't believe the possession and exercise of this knowledge on the part of physicians will unfavorably influence legitimate pharmacy, but will increase the demand for regular preparations at the expense of the many fancy novelties now flooding the shops.

The *third step*, and perhaps that on which most depends, must be taken by the pharmacutists. Their organization is by no means so complete as is that of physicians; nevertheless the American Pharmaceutical Association, in co-operation with the Colleges of Pharmacy, may do much to uphold the pharmacopœia as the law in making officinal preparations; and it is to these institutions that the revisional Committee of the National Convention should look for the most efficient aid in their work. It is complained sometimes that the pharmacopœia does not embrace preparations suited to certain localities. If this be true—if the pharmacutists of New Orleans, Mobile and San Francisco find that their wants are not well represented in that work, now is the time to make suggestions through the journals or in communications to the Associations or directly to the Revisory Committee when appointed. On the other hand, in our northern cities, the German element largely enters; German pharmacy is much practised, and the preparations of the Prussian pharmacopœia are extensively prescribed. These German stores are often kept by men of intelligence and education, who keep the preparations of both pharmacopœias, but in reference to extracts, syrups, and tinctures, it is quite possible that they are often confounded in dispensing prescriptions, and that some influence exerted in that direction might be useful. It is also quite possible that valuable preparations, peculiar to German pharmacy, might be engrafted upon ours in view of the extensive demand from German physicians.

THE TRUMPET-PLANT IN DIARRHŒA.

BY J. DABNEY PALMER.

A yellow-flowered specimen of this plant—known as the *Fly-catcher*, *Huntsman's-cup*, &c.—was brought to my notice last year for the purpose of ascertaining its therapeutic effects. I prepared a tincture of the root according to the following formula, of which I found one teaspoonful a sufficient dose :

R. Trumpet root,	.	.	four ounces.
Diluted alcohol,	.	.	two pints.

Macerate fourteen days, express and filter.

The experiments from that time to the present have been confined to cases of diarrhœa, and with such gratifying results as to justify me in recommending it to the profession. Some of the cases were of long standing and very obstinate; others were recent and yielded immediately. In none, however, were more than four ounces of the tincture necessary to effect a cure. A few doses were generally sufficient. My method of giving it is one teaspoonful after each evacuation.*

Monticello, Florida.

CARBOLIC GLYCERIN AND PLASTER.

LOUISVILLE, Feb. 23d, 1869.

WILLIAM PROCTER, JR., Philadelphia.

MY DEAR SIR,—I take the liberty of dropping you an additional line *apropos* of glycerin as an excipient.

During our sojourn in Europe in 1867, you may remember Dr. Lister, of Glasgow, was experimenting with carbolic acid, with a view to its use as a surgical dressing. He found that one of the most convenient and efficient modes of applying this agent was to incorporate it with glaziers' putty. This was a good idea, for the putty is plastic, handy, cheap, not uncleanly, and adapts itself well to any irregular surface. This close contact is advantageous in two ways—it brings the medicament in intimate con-

* We do not know what plant the author means, as several are so called. *Bignonia radicum* is called trumpet flower, and *Eupatorium purpureum* sometimes called trumpet weed. If the author will advise us, we will state in our next.—ED. AM. J. PH.

nection with the parts to be healed, and it serves the important purpose of excluding the atmospheric air, with its myriads of germs of organisms, thus preventing the action, whatever it may be, of this supposed prolific source of trouble—spores floating in the air—upon sores and exposed denuded surfaces, to say nothing of the influence of atmospheric oxygen upon parts of low vitality, and struggling to resist surrounding destructive agents and processes, (its “levelling” propensity?)

This putty, however, is not the best vehicle for the purpose intended, for it dries pretty rapidly and “sets;” it becomes rigid and finally hard, thus getting into a condition calculated to do much harm and occasion great discomfort. Having been applied to to overcome this difficulty, glycerin instantly suggested itself to me, and I proposed to make a putty with this valuable body instead of linseed oil. The experience of a year and more has established the great value of the improvement. The formula I framed gives a preparation possessing the proper consistence, and one which maintains its properties unimpaired, when kept in closed jars, for a long time.

I. *Carbolic Glycerin.* (T. E. J.)

R. Carbolic Acid,	.	.	.	1 part.
Glycerin,	.	.	.	4 parts.

Mix.

II. *Carbolic Plaster.* (T. E. J.)

R. Carbolic Glycerin,	.	.	34 pts., by weight.
Prepared Chalk,	.	.	94 pts.

Mix well by kneading, and enclose in closely stopped jars.

This preparation will, I think, be found to be all that is desired.*

Yours, very truly,

THOMAS E. JENKINS.

* NOTE.—An apology is due to Dr. Jenkins for the omission of this paper in our May number; the communication was received too late for the March number, and on laying aside for the next was accidentally overlooked.—ED. AM. J. PH.

ON BICARBONATE OF AMMONIA AS A PHARMACEUTICAL PREPARATION.

BY WILLIAM PROCTER, JR.

The writer for many years past has used this salt as an antacid in place of bicarbonate of soda, and now brings it forward as deserving the attention of physicians in certain gastric affections wherein its antacid and substimulating powers may be indicated, in connection with bitter tonics, aperients and aromatics.

It is well known to druggists that considerable quantities of this salt are formed on the sides of casks in which carbonate of ammonia is imported; and other portions are derived from the accidental or careless exposure of the sesqui-carbonate, whereby an equivalent of mono-carbonate is lost. Even in the shop bottles of dispensers this is constantly going on to a limited extent. It has been usual to reserve the salt thus obtained for forming acetate, nitrate, or other ammoniacal salts, but it has rarely been used medicinally on its own merit. If it were sufficiently abundant, or could be prepared cheaply by a direct process, it would form, by all odds, the best yeast powder that can be offered, as it contains a larger portion of carbonic acid than any of the alkaline bicarbonates, except that of lithia, which of course is unsuited to this use, but it is too scarce for that use now. Bicarbonate of ammonia in its purest state is a white salt, isomorphous with bicarbonate of potassa, and possesses the same crystalline form. Its composition is $\text{NH}_4\text{O} + 2\text{CO}_2$, HO. Its taste is saline with a slightly ammoniacal impression, and is slowly volatile when exposed, and gradually evaporates with a slight odor of ammonia. It is soluble in 8 parts of water at 60°F, and its aqueous solution has an alkaline reaction with syrup of violets, (Liebig.) It is decomposed by the heat of boiling water, giving off carbonic acid; on this property its merit as an yeast powder partially depends. It is nearly insoluble in officinal alcohol, but soluble in parts of diluted alcohol. It is most easily prepared in a small way by dissolving out the mono-carbonate from the powdered sublimed sesqui-carbonate (which consists of one equivalent of each salt) by aid of alcohol (U. S. P. 85 per cent.) in which the bicarbonate is but slightly soluble. The residue

may then, after due washing with alcohol, be dried and used in the pulverulent form. When alcohol is added in excess to a solution of the medicinal carbonate the bicarbonate precipitates in a crystalline form.

When a saturated solution of sesqui-carbonate of ammonia in water is saturated with CO_2 , a quantity of the bi-carbonate separates in crystals, owing to its less solubility.

The translucent lumps of sesqui-carbonate of ammonia when exposed lose much weight, and the residue is almost entirely bicarbonate. This is the form in which it is most usually met with, and it may be obtained from that salt at any time, but it is too expensive, 100 parts of the officinal carbonate yielding only about 50 parts of the bicarbonate instead of 59, the theoretical yield. The relative proportions of the potash soda and ammonia salts to saturate one equivalent of SO_3 are 100, 84 and 70, so that ten parts of bicarbonate ammonia nearly equal $14\frac{1}{2}$ parts of the potash and 12 of the soda salt.

THE PROPER STRENGTH OF FLUID EXTRACTS.

BY WILLIAM PROCTER, JR.

The idea of fluid extracts being grain to minim in proportion is a beautiful one, enabling all to remember their medicinal strength. The only officinal departures from this ratio are those of wild cherry and cinchona. The former, owing to the peculiar character of the process, cannot be made more concentrated with a certainty of exhausting the material. The latter probably *can* be made to conform by the agency of glycerin. Originally buchu, valerian and several others were in the same proportion, but were raised to the full strength in 1860. In the case of rhubarb, the large amount of soluble matter in the root is incompatible with so much sugar as exists in the officinal recipe, not only because the preparation is too thick in consistence, but the small quantity of alcohol retained in the extract favors the crystallization of the sugar. This may be avoided by substituting glycerin for sugar, with perfect success, as recommended by Mr. A. B. Taylor (Proc. A. P. Assoc. 1865, p. 156), which I have recently tried with success.

Attention has been recalled to this subject by a paper of Mr. C. Lewis Diehl, in the *Pharmacist* of June, wherein he advocates the reduction of the entire list of fluid extracts to the proportion of 8 troyounces to the pint, in order that they may be made by repercolation (or, as he prefers to call it, "fractional percolation,") so as to avoid evaporation altogether or nearly so.

Now in regard to repercolation I appreciate its advantages in saving menstruum, especially in reference to the solid extracts, and have no objection to any pharmacist who is qualified to use the method to do so, for either solid or fluid extracts, but must earnestly protest against putting such complex manipulation into our pharmacopœia, (except in special instances that might be exceptional) in a class of formulæ so large and frequently used as the extracts and fluid extracts, and as a substitute for simple percolation, which itself, after twenty years tutelage the mass of pharmacutists of the United States are only just getting to understand properly. It is well known that in the reservation of the first portion of percolates in some officinal processes the proper time of fractioning is often neglected. What then would be the condition of a working laboratory, when each fluid extract would require half a dozen kinds of percolates, each of which would require measuring and registering. Dr. Squibb, Mr. Diehl, and others may do this and keep on the track, but of the numerous body of operators who figure in pharmacy, a large number could not be trusted with repercolation who might be competent to perform a simple officinal process.

We hope, for these reasons, that the final committee of revision and publication, to be appointed in May, 1870, will be sufficiently conservative to avoid so great a mistake as the adoption of repercolation as the ordinary process of extraction for fluid and solid extracts, and it is equally to be desired that they retain the proportion of grain to minim.

After thus speaking against *repercolation* as a pharmacopœia process, it is with pleasure, and but just that we should express our admiration of that process as a refinement of percolation, that may be used by any qualified operator on any suitable occasion, and for the manufacturing pharmacist it has merits that will doubtless call it into frequent use.

GLEANINGS FROM GERMAN JOURNALS.

BY JOHN M. MAISCH.

Gas Generators.—Clemens Ullgren, of Stockholm, has constructed a convenient apparatus for the generation of carbonic acid, hydrogen and sulph-hydric acid gas in laboratories. The generator consists of a cylindrical glass vessel, the mouth of which is closed by a twice perforated cork, and which, through a narrow opening at its bottom, is permanently fastened to a larger flat glass vessel, intended to receive from the cylinder the saline solution, which can be drawn off as well through a stop-cock or a bent glass tube inserted near the bottom. The generator, through the perforated cork, connects with a wash bottle by means of a bent glass and caoutchouc tube, and with the acid receiver near its bottom by means of a glass tube supplied with a stop-cock and a strong rubber tube. The acid receiver—a plain bottle perforated on one side near its bottom—is imperfectly closed by a cork, through which a bent glass tube is inserted. The author uses muriatic acid diluted with water until it ceases to give off fumes; the generator is filled with pieces of marble, zinc or sulphide of iron, which, by some pieces of glass, are prevented from falling into the vessel below; the acid is admitted by opening the stop-cock above the generator, and passing through the material in the latter is completely saturated, while a uniform current of gas is evolved. The advantages of this apparatus are that the current of gas can be regulated by the flow of the acid through the stop-cock, and can be discontinued at will; that the saline solution is not in contact with the generating material and may be drawn off even during the generation of the gas, and that the apparatus is easily handled and always ready for use.—*Zeitschr. f. Analyt. Chem.*, 1869, 43–45.

A portable sulphuretted hydrogen apparatus has been constructed by F. Jicinsky. It consists of a small glass stoppered vial, with a plug of caoutchouc firmly inserted in the upper half and with a caoutchouc stopper in place of the bottom; both the rubber stopper and plug are perforated for receiving a glass tube filled with cotton and closed at the upper end, but with a small aperture a little below; the lower end is open. Sulphide

of iron is first placed upon the caoutchouc stopper, and after replacing it and the tube, dilute sulphuric acid is poured into the upper portion of the vial. When gas is to be generated, the tube is withdrawn from the plug so as to let the acid pass into the lower portion of the vial, when the tube is again inserted into the plug, the lower portion communicating through the aperture with the open end of the tube through which the gas escapes after having been filtered through the cotton.

When the tube is pushed through the plug to near the glass stopper, the apparatus can be conveniently carried in the vest pocket.—*Ibid.*, 56–58.

Water-bath.—C. Ullgren has constructed a water-bath, which is almost identical with the water-baths in use in the restaurants and oyster saloons in the United States; the water is heated by a Bunsen's gas-lamp, and not only the direct heat, but also the heat of the hot gases of combustion is utilized.—*Ibid.* 47.

Test for Sulphur.—Dr. Schönn, of Stettin, detects sulphur in organic compounds and in all inorganic sulphosalts, sulphides, sulphyocyanides, sulphates, &c., by placing a little of the dry substance in a test tube, adding a small piece of potassium or sodium, and covering it with more of the dry substance. The tube is heated until the reduction is completed in a few seconds, when the tube is broken and its contents thrown into a dilute acid or a solution of nitroprusside of sodium; the former evolves sulphuretted hydrogen, the latter produces the well known violet color.—*Ibid.* 51–53.

Test for Phosphorus.—Dr. Schönn detects phosphorus in organic and inorganic substances by mixing the anhydrous powder with magnesium filings and heating the mixture for some time in a test tube. If now a few drops of water are added, phosphoretted hydrogen is given off and recognized by its onion-like odor; a sublimation of red phosphorus and phosphorescence is often observed, if magnesium is used in somewhat larger proportion; ammonio-phosphate of soda, phosphate of soda, burned bones, &c., show this reaction well.—*Ibid.* 53–56.

Reduction of Silver.—Gräger (N. Jahrb. f. Ph. xxix, 9,) obtains chemically pure silver from an ammoniacal solution of

chloride of silver by pure zinc. When the liquid ceases to become turbid with muriatic acid, it is poured off, the sediment washed by decantation with water, the zinc removed by passing the residue through a funnel loosely stopped with glass, the powdered silver digested with muriatic acid and afterwards washed successively with water, ammonia and water. An ammoniacal solution of nitrate of silver containing copper yields likewise pure silver, if the whole amount of zinc requisite for effecting the reduction is not added; the silver is obtained first, after which the copper is slowly reduced.—*Ibid.* 64.

Alkaloid by fermentation.—Brüche suggested, a few years ago, that an alkaloid was formed during fermentation. J. Oser fermented 50 pounds pure cane sugar, and obtained 11.747 grm. of the gold double salt = 4.846 grm. of the base; the composition of which appears to be $C_{26}H_{20}N_4$. The muriate yields in vacuo colorless scales of a somewhat burning and bitter taste, which are very hygroscopic, and on exposure turn brown. Since the base must have been generated from the yeast (pure yeast contains no alkaloid), it follows that it is contained in all fermented liquids, but being readily decomposed, it may be converted into trimethylanin, which was found by E. Ludwig in wine.—*Chem. Centralbl.* 1819, 141, 142 from *Wien. Sitzungsber.* lvi, 489.

Test for Morphia.—Almén found (*N. Jahrbuch f. Pharm.* xxx, 37,) that Fröhde's test for morphia (beautiful violet color with sulphuric acid containing molybdic acid) is applicable also to most morphia salts; the same color is likewise produced by opium and by extracts of opium which contain no morphia.—*Ibid.* 77.

Test for Salicin in Quinia.—E. Parrot recommends (*Zeitschr. f. Anal. Chem.* v, 287) to distil a few grains of the suspected quinia with 4 c. c. of a cold saturated solution of bichromate of potassa and two c. c. of sulphuric acid prepared from 1 vol. concentrated acid with 4 vol. water. The boiling is continued for one or two minutes, so that no sulphuric acid is carried over. Salicylous acid is formed if salicin is present, and the distillate

is colored deep violet by a drop of solution of sesquichloride of iron.—*Zeitschr. des österr. Apoth. Ver.* 1869, 11.

Eucalyptus globulus, Labill. has, according to Schützenberger, been introduced from Australia into Spain, near Santiago, which has a very moist climate, and in July and August is usually visited by cold northern winds. The leaves are extolled as a febrifuge and anodyne.—*Ibid.*, 17.

Resina d'angelim pedra is a resin found in the cavities of old Brazilian trees, the *Ferreira spectabilis*, Fr., Allem. Leguminosæ, viii, Dalbergiæ. Dr. Peckolt stated that it consists almost wholly of a volatile alkaloid, which he named angelina, and which yields with acids crystallizable salts. Dr. W. F. Gintl, of Prague, finds (*Sitzungsber. d. kais. Akad. d. Wissensch.*) that this substance is almost insoluble in cold water, in alcohol and ether, has a neutral reaction, dissolves readily in acids without neutralizing them, and crystallizes from these solutions in combination with the acids; the compounds, however, are completely decomposed by much water. Diffused in water and boiled with little nitric acid, a rose red color is produced, changing to ruby, and finally through violet into blue; more nitric acid produces a green and finally a brown color. These colored solutions, except the last, show a beautiful red fluorescence. The liquid obtained by treating angelina with concentrated sulphuric acid, and then neutralizing with carbonate of baryta, is colored violet by ferric chloride. It fuses and volatilizes. The sublimate, however, has different properties. Its composition is $C_{20}H_{13}NO_6$. All these reactions prove the substance to be identical with the so-called rhatanin of Dr. Emil Ruge, which he found in the South American extract of rhatany, and which can not be obtained from rhatany root. Dr. G. suggests that some varieties of kino obtained from the order Dalbergiæ are used as substitutes or adulterations of extract of rhatany, which may account for its containing the so-called rhatanin, unless some portion of *Krameria triandra* should contain it.—*Ibid.*, p. 32—37.

Syrupus Diacodii, prepared according to the Austrian Pharmacopœia, by digesting poppy heads for two hours with hot water, contains, according to Alfred Siersch, less than half the

quantity of morphia found in the ripe capsules, the greater part of which is insoluble in hot water, but soluble in dilute acids.—*Ibid.*, 53—56.

Oxide of iron containing cyanogen has been met with in commerce by H. Reinsch (N. Jahrb. f. Pharm. xxx, 8). Treated with sulphuric acid, it yielded with water a nickel green solution from which Prussian blue separated. The cyanogen must be referred to the use of either carbonate of potassa, as it is sometimes obtained in making ferrocyanide of potassium, or of carbonate of soda, since considerable quantities of cyanide are sometimes formed in the preparation of soda.—*Ibid.*, 61.

Arrowroot.—Dr. Eberhard, of Blumenau, Brazil, found the root of *Maranta arundinacea* to contain 20·78 starch, 68·52 water, 9·48 lignin, 1·22 ashes. The root of *Manihot utilisima* (cassava or mandiaca) yields 13·63 starch, 61·70 water, 23·49 lignin, 1·18 ashes. 24 square rods of ground yield of the former 1411 and of the latter 1880 lbs. The culture and exportation of arrowroot are on the increase in the German colonies in Brazil.—*Ibid.*, 81.

Yield of Extracts.—Kohlmann gives in Apoth. Ztg. the following table, but remarks that various circumstances—locality of growth, relative dryness of the drugs, and manipulation, may considerably influence the results. The spirituous extracts were prepared according to the Pharm. Germ., and if that contains no formula, according to the Prussian or Saxon Pharmacopœias :

Per cent.		Per cent.	
Extr. absinthii,	18 00	Extr. hellebori vir,	15·79
“ aconiti e tuber.	28·33	“ lupuli plv. sic.,	13·20
“ arnicæ flor.,	28·00	“ millefolii,	27·44
“ aurantii,	27·33	“ pimpinellæ,	23·33
“ calami,	25·00	“ polygalæ,	39·16
“ cannabis indic.,	13·33	“ rhei,	51·72
“ chamomillæ (matricar.),	25·00	“ sabinæ,	22·22
“ chinæ (cinch.),	18·21	“ sarsaparill.,	8·61
“ colocynthid.,	9·82	“ scillæ,	66·66
“ columbo,	9·97	“ secal. corn.,	11·60
“ fol. jugland.,	23·61	“ strychni (nuc. vom.) mas.	
“ guaiaci,	14·00	“ pil.,	11·33
		“ strychni pulv.	9·5

—*Ibid.*, 127.

Allyl compounds. B. Tollens and A. Henninger observed that a mixture of 4 parts glycerin and 1 oxalic acid, heated to 190° C., contains formiate of glycerin (monoformin), which may be dissolved out by ether; it liberates with water formic acid, but yields on distillation carbonic acid and allylic alcohol. The above mixture distilled at 190 C. yields allylic alcohol, allyl-formic ether, acrolein, &c. The allylic alcohol treated with bromide of phosphorus yields bromide of allyle, which with sulphide of potassium forms sulphyde of allyle (oil of garlic), and with sulphocyanide of potassium, oil of mustard; the latter is also obtained by distilling allyle-sulphate of potassa with sulphocyanide of potassium. The oils obtained by either process are identical with that obtained from the seed. This method is used with advantage for manufacturing the volatile oil.—*Zeitschr. f. Chemie*, 1869, 88—90.

Valerianic acid.—C. Stalman has again examined the natural and artificial valerianic acid with the view of determining their asserted difference. He found the salts of strontia, zinc and quinia (the latter contains 1 equiv. acid, 1 of base, and 1 of water) of both acids precisely alike; but while the baryta salt of the true acid would be readily obtained in large laminæ, when the solution was evaporated in vacuo over sulphuric acid, the salt from the artificial acid would yield only a thick syrup; he therefore regards the two acids as isomeric but not as identical.—*Archiv d. Pharm.*, 1869, March, 258. From *Ann. d. Ch. und Pharm.* 1868, Aug. 129—134.

To determine an adulteration of glycerin with sugar.—A. Vogel adds to 5 drops of the suspected liquid 100 to 120 drops of water, and about 4 centigr. molybdate of ammonia with 1 drop of pure nitric acid; after boiling, an intense blue color is produced if but a trace of sugar was present. Dextrin does not give as reliable a reaction; the copper test for glucose is preferable to detect it.—*Buchner's N. Repert.*, 1869, 24.

"SWEET QUININE:" WHAT IS IT?

BY THE EDITOR.

We have been repeatedly asked the nature of the substance

thrown into commerce by Mr. Frederick Stearns, under the name of “sweet quinine.” In the March number of this journal, page 187, we gave a statement based solely upon the manufacturer’s circular (not then having examined the article), from which we naturally inferred it to be the alkaloid quinia, associated with liquorice sugar. The following are the paragraphs: “Sweet quinine is as definite a chemical salt as the sulphate (or bitter) quinine—is made direct from the same source—Peruvian bark; has, like it, positive tonic and antiperiodic power,” &c.

“In sweet quinine each atom of the alkaloid is enveloped in *glicion*, the sweet principle of liquorice, and it forms an aggregation of minute sugar-coated molecules of quinine.” Nothing is said about any other alkaloid than quinia, and it is clearly intended that the reader should infer from the words used that the manufacturer’s skill has succeeded in combining free quinine with glycyrrhizin in lieu of sulphuric acid, so as to mask its bitterness.

Having within a few days (June 28) had our suspicion excited, we determined to examine it, and have satisfied ourself that this so-called sweet quinine is no quinine at all, but mainly the alkaloid *cinchonia* precipitated from the sulphate, dried and triturated with an impure glycyrrhizin prepared from liquorice root. Cinchonia is very insoluble, requiring nearly 4000 parts of cold water, hence the tastelessness of “sweet quinine,” and its bitterness with acid or alcoholic fluids which salify and dissolve it. The substance associated with it is nearly all removed by hot water, to which it gives a straw-color. It froths much by agitation, and has a power of suspending or emulsifying the finely powdered cinchonia. These statements are based on the following experiments:—*sweet quinine* laid on reddened litmus paper and touched with a drop of alcohol restores its blue tint immediately. The same occurs more slowly with a drop of water. It is almost wholly soluble in boiling alcohol in excess, yielding a light straw-colored alkaline solution. Treated with boiling water and well washed on a filter, it yields about 25 per cent. of its weight to that fluid, which acquires a straw color, froths much by agitation, is without bitterness, and not precipitated by subacetate of lead or alcohol. Weak iodine water gives a greenish color which soon fades, indicative of a trace of starch. Evapo-

rated, this liquid deepens in color, and separates a dark film which remains insoluble. As the liquid concentrates its sweetness increases, and its taste is that of liquorice root. The residue insoluble in water was dried and treated with boiling alcohol, in which it dissolves, except some flocculent impurities of a dark color, probably derived from the liquorice root. The alcoholic solution precipitated crystals by cooling and by evaporation, on standing.

These crystals were soluble in dilute sulphuric acid, forming a crystalline salt, which, when dissolved in an excess of chlorine water, gave, on the addition of ammonia a white precipitate, like cinchonia produces, without the *slightest* trace of green to indicate quinia. When the salt was added to a solution of ferrocyanide of potassium, (Dr. Bill's test for cinchonia) a yellow curdy precipitate fell, which by gently heating became crystalline on cooling. When the salt is dissolved in a little water in a test tube, and ether added followed by ammonia, and shaken, the liquids separate and leave a whitish insoluble layer at their juncture. When treated by Herapath's test no indication of green Herapathite crystals was obtained but the brown precipitate, followed on standing by the dense, almost black crystals usual with cinchonia. There can be no doubt, from these results, that "sweet quinine" consists of about three parts of cinchonia and one of impure glycyrrhizin. Quite possibly there may be some cinchonidin also present, in small quantity, but no examination has been made for it. To what extent the glycyrrhizin acts as an acid towards the cinchonia we do not know, but its well-known affinity for bases renders it quite possible that such a relation might exist, though we incline to believe the union to be mechanical by trituration, as stated by the circular. We confess to being surprised at this result, when viewed in connection with the circular of Mr. Stearns. The *morale* of the affair is doubtful—cinchonia, however tasteless is not quinine, nor does its commercial value approach that of quinine so nearly as it is made to do in the garb of "sweet quinine." When physicians want cinchonia they can get it by prescription, and it is not in accordance with our ideas of fair dealing to serve it up as a new substance.

COMPARATIVE EXAMINATION OF THE IPECACUANHAS
OF BRAZIL AND NEW GRENADA OR CARTHAGENA.

BY M. J. LEFORT.

The author (*Jour. de Pharm.*, Mars, 1869,) after alluding to the history of Brazilian Ipecacuanha and its botanical origin, remarks as follows: But, in certain parts of South America, another sort of Ipecac is found, to which we desire to draw attention.

Since about twenty years, the growing success of the cinchona trade of New Grenada on the one part, and the constantly advancing price of the Ipecac of Brazil, occasioned by the scarcity of the plant which furnishes it, on the other part, have given the idea to the Americans to collect and send to Europe, under the name of New Grenada or Carthagena Ipecacuanha, a variety of Ipecac which grows in great abundance on the torrid banks of the river Magdalena.

This Ipecac is without doubt the variety designated by M. Guibourt under the name *Ipecacuanha annelé majeur* or *Ipecacuanha gris blanc de Merat* (Hist. des Drogues, t. iii.) This savant presumed it to belong to the genus *Cephælis*, but a different species from that of Brazil.

Although M. Weddell did not find *Cephælis ipecacuanha* beyond the frontiers of Brazil, it appears from the inquiries of M. Triana, accompanying the products of New Grenada at the Universal Exposition at Paris, that it is derived, as supposed by M. Guibourt, from a species of *Cephælis* not yet described by botanists.

Save in its color, which is always greyish, or lightly reddish, and in the size and length of its roots, this kind of Ipecac, by the disposition of its rings, presents so much resemblance to that of Brazil, as to account for its introduction into Europe. Nevertheless, the first parcels received in France were not accepted with much favor by druggists, partially because normal Ipecac was plenty, and because it was deemed a false ipecac much inferior to the latter. But in four or five years this opinion was changed by greater care in collecting the root, and it gradually acquired a true importance in the market, until at present its commercial value is nearly equal to the Brazilian.

But whilst druggists appear to be satisfied with the new Ipecac from its physical characters, pharmacutists have had some hesitation to adopt it in the absence of direct analysis and therapeutic trials, and it was with the motive of settling by analysis the real character of this Ipecac that the author undertook this paper.

1. Pelletier and M. Dumas, tracing for the first time the chemical history of emetia, remarked that this alkaloid produces a very insoluble tannate; this reaction has been used to determine the proportion of emetia contained in each of the commercial varieties.

A certain weight of powdered Ipecac dried at 212° was exhausted, first, with warm alcohol, and then with diluted alcohol, the solutions united and evaporated to a syrupy consistence. The residue was treated with fifteen to twenty times its weight of water, the solution filtered and a slight excess of tannin added, which caused an abundant precipitate of tannate of emetia. This precipitate, collected on a tared filter, was washed, and dried in a stove. This process unites great precision with readiness of execution, and has enabled us to discover that New Grenada Ipecac is always a little less rich in emetia than that of Brazil.

The following results were obtained in operating on ten grammes (154 grains) of the powder of each kind, deprived of the woody portion:

<i>Ipecacuanha of Brazil.</i>	<i>Tannate of Emetia.</i>
-------------------------------	---------------------------

First experiment	100 grammes yielded 1.441 grammes.
------------------	------------------------------------

Second “	100 “ “ 1.458 “
----------	-----------------

Ipecacuanha of New Grenada.

First experiment	100 grammes yielded 1.380 grammes.
------------------	------------------------------------

Second “	100 “ “ 1.302 “
----------	-----------------

2. In studying the chemical properties of emetia M. Lefort has discovered that its nitrate enjoys the rare property of being but little soluble in water, so that an aqueous solution of acetate of emetia is precipitated voluminously by nitrate of potassa, which precipitate agglutinates into a brown extract like mass very soluble in alcohol.

The author tried this reaction as an assay, operating on an

aqueous solution of the alcoholic extract of each drug with nitrate of potassa.

Nitrate of Emetia.

100 parts of Brazil Ipecac yielded 1·350 parts

100 " " New Grenada Ipecac " 1·082 "

It results from these researches that whilst the Brazil Ipecac is a little richer in alkaloid it appears also to contain more of the resinoid odorous matter and more of the brown coloring matter. As regards the proportion of ligneous fibre in each,

100 parts of Brazil Ipecac gave 18·75 parts.

100 " " New Grenada " " 20·01 "

In conclusion, the author is of the opinion that, though allied in composition and properties, the pharmacist should not use them indiscriminately, but should prefer the Brazilian variety, but if the time should arrive when the latter should become exhausted, the New Grenada variety will offer a valuable succedaneum. [See continuation on Emetia, following.]

ON THE PREPARATION, PROPERTIES AND COMPOSITION OF EMETIA.

BY M. J. LEFORT.

In this essay, which is a sequel to that on Ipecacuanhas, at page 305, the author gives a sketch of the chemical history of this alkaloid, and especially notices the process of M. Leprat (1853), who bases his method on that of Rabourdin for atropia by potassa and chloroform. By a modification of this process the author proceeded as follows:

Ipecacuanha powder was exhausted by percolation, first with alcohol 86° and then with alcohol 56° (centesimal); the tinctures united are thrown into a distillatory apparatus to recover the alcohol, the residue being concentrated in a water bath to a syrupy consistence.

This residue, which contains the emetia in combination with a peculiar organic acid, ipecacuanhic acid—which M. Willick has investigated (*Jour. de Pharm.* t. xx, p. 276, 1851)—is thrown into a flask, with glass stopper, adding 2 parts of caustic potassa, dissolved in a little water, for each 100 parts of the powder employed, and then as much chloroform as equals in vol

ume that of the mixture. As emetia is very soluble in potassa, and as the alkaline solution absorbs oxygen rapidly from the air, the flask in which the reaction is effected should always be full.

The mixture is agitated violently, and left to repose during many days; the chloroform, which forms a kind of emulsion, separates little by little, occupying the bottom of the vessel. This is decanted and replaced by a new portion of chloroform.

As soon as the washings are nearly colorless, they are united, filtered, and the chloroform regained by distillation, by aid of a water bath and retort.

The residue in the retort is deep brown, and composed principally of emetia and resinoid matter, which last, according to Pelletier and Magendie, is not emetic. The emetia is separated by a weak acid, which dissolves only the alkaloid. The solution is then decomposed by ammonia, avoiding any excess, as emetia is soluble in ammoniacal water. Emetia is then deposited as a bulky greyish powder, which is washed with distilled water by decantation, and collected on a filter.

It is finally digested with ether, to remove a trace of resinoid matter, and dried, when the alkaloid, of great purity, is obtained.

Properties. When it has been precipitated from saline solutions by ammonia, and dried at a temperature below 133° Fahr., emetia presents the form of a very light greyish powder, if it has not been perfectly purified, and whitish if it is very pure.

It is nearly odorless, and its taste bitter. It fuses at the temperature of 158° Fahr., and assumes the form of a brown transparent extract.

Exposed freely to the air it becomes light brown colored, but does not attract humidity so as to become liquid, as stated by Pelletier and Magendie.

At 59° Fahr. water dissolves one-thousandth of its weight, and the solution possesses always a yellowish tint, as well as an alkaline reaction. Alcohol and chloroform dissolve it in all proportions, and it never crystallizes by their evaporation. It is but slightly soluble in ether and the fixed oils. Solutions of the caustic alkalies dissolve it very readily, and the solutions rapidly ab-

sorb oxygen from the air. Caustic ammonia is not a good solvent, yet ammoniacal water retains a portion of it. Caustic lime and magnesia also, in presence of moisture, favor its oxidation, and give it a saffron color.

Chlorohydric, sulphuric, phosphoric and acetic acids easily saturate emetia, producing salts, which are all uncrystallizable, and very soluble in water.

Nitric acid, on the contrary, forms a salt but slightly soluble, by double decomposition between a soluble salt of emetia and nitrate of potassa. The precipitate, at first bulky, soon agglutinates into a brown mass. It is uncrystallizable, and requires 100 parts of water for solution.

The insolubility of its nitrate forms the most distinctive chemical character of emetia, urea being the only other base which has the same characteristic.

Tannin precipitates emetia abundantly in aqueous, alcoholic or saline solutions.

Ioduretted iodide of potassium also precipitates it, and bichloride of mercury and iodo-hydrogyrate of potassium form white compounds insoluble in water, but soluble in alcohol.

The platinum chloride double salt, however, is soluble in water but not in alcohol.

Emetia is also precipitated from its salts by molybdate of ammonia.

Composition. In 1823, Pelletier and Dumas stated the composition of emetia per cent. to be carbon 64.57, nitrogen 4.30, hydrogen 7.77, oxygen 22.95.

These numbers accord with the formula, $C^{30} H^{22} NO^3$.

But the capacity of saturation had not then been determined. M. Lefort, by careful experiments with very pure emetia, has made the sulphate and chlorohydrate neutral, and dried them at 100 F.

- a. Sulphate of Emetia.* I. 0.913 grm. of the salt gave 0.0711 of sulphuric acid, or 7.79 per cent.
II. 0.563 grm. of the salt gave 0.042 of sulphuric acid, or 7.31 per cent.

The formula $C^{60} H^{44} N^2 O^{16} + SO^3$ requires 6.60 of acid per cent.

- β . *Chlorohydrate of Emetia*.—I. 0.819 of the salt gave 0.0436 of chlorine, or 5.33 per cent.
 II. 0.368 of the salt gave 0.0217 of chlorine, or 5.89 per cent.

The formula $C^{60} H^{44} N^2 O^{16} + HCl$ requires 5.91 per cent. of chlorine.

The author therefore thinks that these results require the formula of Pelletier and Dumas to be doubled, and hopes that further analytical research on the salts of emetia will corroborate his results.—*Jour. de Pharm.*, Avril, 1869, p. 241.

ON THEVETINE.

BY M. BLAS.

The *Thevetia nerifolia* is a tree of the family Apocynæ, which grows in the West Indies, New Grenada, Peru, and the East Indies; its bark is considered a powerful febrifuge. Its seeds contain, according to Prof. de Vry, nearly 57 per cent. of a nearly colorless fixed oil, odorless, with a taste analogous to that of sweet almonds, and a poisonous principle which is a glucoside. It is extracted from the bruised seed by alcohol, after the fixed oil has been removed first by pressure, and then by ether, and the marc extracted by cold water and dried. The alcoholic liquid by evaporation deposits a white crystalline powder, having an extremely acrid taste.

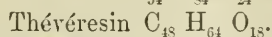
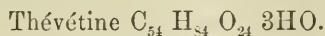
When thévétine is boiled with diluted hydrochloric or sulphuric acid it is transformed into glucose and a resinous body, which he calls thévéresin.

This thévéresin, that has been purified by precipitating its alcoholic solution by water, constitutes an amorphous powder, which agglutinates readily. It is inodorous, has a weakly bitter taste, is poisonous, and is nearly insoluble in cold water and ether.

M. Blas, after a series of experiments, arrives at the following conclusions: 1. Thévétine and thévéresin are poisons sufficiently potent to cause death, in small doses. 2. Thévétine is not transformed in passing in the organism. 3. The poisonous action of thévéresin differs little from that of thévétine. 4. Thévétine

accumulates in the liver, and chemical analysis finds it neither in the urine, the blood, nor in the milk.

M. Blas has analysed these principles, and attributes to them the following formulæ :



—*Jour de Pharm. Mai, 1869, et Rep. de Pharm.*

ON THE PRODUCTION OF OPIUM NEAR BERLIN.

BY DR. C. O. HARZ.

Professor H. Karsten has repeatedly called attention to the importance of, and the profit arising from, the culture of opium in Germany, in connection with the poppy seeds which yield a fine bland oil. Former observations made on the Berlin experimental farm, (Akklimationsfeld), having demonstrated that the variety of poppy known as gigantic poppy yielded most seed, and that the blue and white poppy were little inferior, another experiment was made in 1864 with these varieties on the same farm. The plants thrived well in the meagre but well manured sandy soil, and yielded opium with all the physical properties of good Smyrna opium. According to Marggraff, it yielded from

Giant poppy 66.3 per cent. soluble constituents, 13.6 per cent. alkaloids, of which 9.3 per cent. was morphia.
 Blue poppy 70.1 per cent. soluble constituents, 10.7 per cent. alkaloids, of which 8.0 per cent. was morphia.
 White poppy 69.6 per cent. soluble constituents, 8.0 per cent. alkaloids.

The last two samples were too small to yield exact results; they surpassed the former in intensity of odor, and Marggraff supposes would have yielded the same amount of morphia if they had been in larger quantity.

In 1866 Prof. Karsten raised the poppy near Charlottenburg; the seed was sown in rows, each pair being six inches apart, and separated two feet from the next pair of rows. The young plants were thinned to a distance of four inches, and about eight days after they shed their flowers, when the capsules were of the size of a walnut, a special incision from the base to the

apex was made with the precaution not to cut through the inner integument of the capsule. From many experiments Karsten found the spiral incision the most profitable; a horizontal circular incision about one-third above the base yields nearly the same amount of milky juice; numerous vertical incisions are objectionable. The knife used for this purpose was protected just above the point by twine or by a rag, to prevent it from penetrating into the interior cavity. After a few minutes the juice was removed with the finger into a suitable vessel and subsequently inspissated by means of a water bath; a second incision after a few days proved unsuccessful.

This opium yielded two-thirds of its weight to distilled water and contained 10 per cent. morphia. Of the same quality was opium obtained by Hermes near Hermsdorf, from the giant poppy cultivated as stated above. R. Schulze, of Pankow, obtained from the same poppy, opium, one-half of which was soluble in water, and which yielded likewise 10 per cent. of morphia.

The author obtained the opium made at the latter place in 1867, and described it as hard, tough, of a grey-brown color, similar to German lactucarium, somewhat shining and made up in part of tears of the size of a pea and smaller; it was with difficulty rubbed into a light grey powder; its odor was stronger than that of Smyrna opium, reminding somewhat of lactucarium; taste like that of the best opium. The tincture was scarcely one-third as dark as if made from Smyrna opium. Fifteen grm. yielded, to cold distilled water, 7.41 grm. = 49 per cent. soluble constituents, from which alcohol precipitated 1.41 grm. = 9.4 per cent. gummy matter and salts. The filtrate treated with ammonia yielded in ten days 1.63 grm. = 10.9 per cent. crystals of morphia. The residue left, by water, yielded to alcohol 7 per cent. resinous matter, and to chloroform 14 per cent. of a caoutchouc like mass.

The results are satisfactory, and it is to be hoped that with continued practical and theoretical observations the yield of a still richer opium may be expected, like the rational culture of the cinchonas in the East Indies produces bark richer in alkaloids, particularly quinia, than the South American.

The author appeals to apothecaries and agricultural schools to

assist those who are willing to raise this important drug; he regards the absence of the dark coloring matter as favorable for obtaining morphia, and thinks that the few pounds which are still needed in Germany for those antiquated physicians who mostly prescribe opium, may still be imported from the East.—*Zeitschr. d. österr. Apoth. Ver.* 1869, 12–16, from *Wittst. Viertelj. Schr.* xvii, 481.

PREPARATION OF ALCOHOLIC NARCOTIC EXTRACTS.

By FRANZ J. KRAL, of Prague.

The process of the Austrian Pharmacopœia for preparing alcoholic extracts fresh from narcotic herbs, the author has for some time past used; the following is the process which yields extracts of strong narcotic odor, soluble in water without turbidity and of undoubted physiological properties.

To each pound of the fresh herb 3 oz. of distilled water is taken, and the whole mashed in a porcelain mortar to a pulp and expressed. The juice is set aside in a cool cellar for 8 or 10 hours and carefully decanted from the sediment. The clear liquid is heated in a steam-bath for 5 minutes to 75°C. and then again set aside in a cool place for 6 to 10 hours, when it is passed through a close strainer and the filtrate at once evaporated in a porcelain capsule by means of a steam-bath, at a temperature not exceeding 70°C., to a syrupy consistence, when it is allowed to cool, mixed with $1\frac{1}{2}$ times its volume of stronger alcohol, and the mixture digested for four days.

Meanwhile the wet residue upon the strainer is digested with $1\frac{1}{2}$ times its weight of alcohol, then strained and the residue expressed. Both alcoholic liquids are now mixed, filtered and the filtrate concentrated either in vacuo or in a still by means of a steam-bath, and finally evaporated to the proper consistence.

If one part of this extract is mixed with four parts of powdered sugar, or with three parts of sugar and one part of powdered liquorice root, milk-sugar or gum arabic, and the mixture is carefully dried in a steam-bath, the resulting powder remains perfectly dry if kept in well stopped bottles.

Extract. hyoseyam. thus prepared and recently dissolved in

water, is in some cases much more reliable than the powdered; thus patients suffering with a spasmodic cough were much relieved by 2 one grain doses, taking morning and evening. M. —*Zeitsch. d. aesterr. Apoth. Ver.* 1869, 41–42.

ON ACONITIA AND PSEUDO-ACONITIA.

BY M. F. HUBSCHMANN.

M. Hubschmann has made a comparative study of aconitia found in English commerce and that prepared by himself by the process of Geiger.

The aconitia extracted by him from the fresh roots of aconite with blue flowers, collected in Switzerland, presents the form of an amorphous white powder, not adhering to paper. It has a decided bitterness, but little acrimony, is alkaline, and burns without leaving a residue. It is soluble in two parts of ether, 2.60 of chloroform, and in 4.25 of alcohol. Each of these three solvents leaves an amorphous, colorless mass, of a vitreous non-crystalline appearance. Benzine softens it to a resinous mass and slowly dissolves it. Heat causes it to dissolve quickly. In boiling water it is softened and becomes hard and brittle on cooling. Sulphuric acid dissolves it and is colored yellow, which is not changed on the addition of nitrate of potassa.

English aconitia is, to the contrary, a fine powder, very adherent to paper, dirty white colored and burning without residue. It is but little soluble in ether, cold or hot, but the ethereal solution by evaporation deposits little white crystals. It requires 250 parts of chloroform for solution, and this, on evaporation, yields little crystals. Twenty parts of boiling alcohol dissolve English aconitia, which crystallizes by cooling. Cold benzine don't dissolve or affect it. When heated it dissolves and is precipitated by cooling, partly in crystals and partly amorphous. It is not colored by sulphuric acid pure, or with nitrate of potassa.

If it is admitted that English aconitia is really extracted from a variety of aconite (a point which is not clearly proven to the author.) It is certain that it has no more claim to be aconitia than narcotin has to be morphia.—*Jour. de Pharm., Mai*, 1869, from *Jour. D'Anvers*.

ON CRYSTALLIZED DIGITALIN.

BY M. C. A. NATIVELLE.

In the *Moniteur Scientifique* of Feb. 15, 1867, the author published a memoir addressed to the Belgian Academy of Medecine the previous year for the *concours* which it had opened on digitalin.

Since that time, after many difficulties he has obtained this new substance by a more direct means, avoiding the operation with tannin and oxide of lead, and by separating by means of chloroform an abundant crystallizable principle which is *wholly without taste*.

This principle is less soluble in alcohol than crystallized digitalin, and deposits first soon after the cooling of the liquor; afterwards the digitalin in radiated crystals appears. This difference caused the author to suppose it a modification of digitalin by heat, and the less intense bitterness of the mixture favored this view; but crystallized digitalin, on the contrary, is a stable substance which is not affected by the heat of boiling water. The sample of crystallized digitalin in the Paris Exposition, sent by him, contained about *two-thirds* of its weight of this inert substance.

Extraction of Crystallized Digitalin.—Crystallized digitalin is found in the *residue of digitalis exhausted by water*, in the process for obtaining the amorphous digitalin in use under that name. This residue, considered as useless, contains the most interesting ingredient and true principle of digitalis.

Mix 100 parts of coarsely powdered digitalis of the woods, (collected in May before the development of the floral stem, when the leaves are richest in activity) with 100 parts of water and 25 parts of crystallized acetate of lead; twelve hours after percolate the mixture with water, after packing it in a cylinder, until 300 parts of liquid is obtained, which set aside. Dry the residue in the percolator, and treat it with alcohol of 50 per cent. until deprived of taste. When about 300 parts of tincture have passed add to it 4 parts of crystallized acetate of lead, filter, and into the decolorized liquid throw a solution containing two parts of phosphate of soda. Separate this new precipitate and distil the liquid by a water-bath to regain the alcohol. The residue

of the distillation holds in suspension numerous little crystals mixed with a sticky yellowish matter strongly bitter. The crystals are not digitalin, which last is in the yellow matter. This is evaporated in a water-bath till reduced to about 10 parts. Separate this matter from the dense liquid, wash it with a little cold water and spread it on porous papers to dry. Two or three parts of this substance are obtained, which is dissolved hot in a flask with double its weight of alcohol and set aside in a cool place. The inert crystalline substance is deposited first, and after some days yellowish radiating crystals of digitalin appear among them. When the latter cease to increase put the whole on a funnel closed with cotton, allow the mother water to drain, and then wash them with alcohol of 15 per cent. The crystalline residue is then dissolved in boiling alcohol of 80 per cent., boiled with a little animal charcoal, filtered, concentrated to one-half and allowed to become a crystalline mass on cooling. After several days separate the mother water, dry the crystals, powder them and put them in a flask with 20 parts of pure chloroform and agitate well. The digitalin only is dissolved, and is obtained by distillation to regain the chloroform. The digitalin in this state has a yellowish color, to remove which and get it white it is necessary to dissolve it in boiling alcohol, agitate with a little carefully prepared animal charcoal, filter and crystallize. 1000 parts of digitalis, *after* it has been exhausted by water, yields one part of pure crystallized digitalin.

Properties and analysis. Thus obtained digitalin is neutral, odorless, intensely and persistently bitter like digitalis, and contains no nitrogen. Its insolubility in water causes its taste to be slowly developed unless aided by alcohol. It is very soluble in chloroform; in 12 parts of alcohol of 90 per cent. and in 6 parts boiling; less soluble in anhydrous alcohol; ether free from alcohol dissolves but a trace. Even boiling water dissolves very little yet acquires a decided bitterness.

Sulphuric acid dissolves it with a greenish tint which becomes reddish by bromine vapor.

Nitric acid dissolves it without color at first, but afterwards is yellowish.

Muriatic acid dissolves it with a greenish yellow color passing

to emerald green, which, in dilution with water, forms greenish resinous flocks.

Heated to 212° F. it softens and becomes elastic; heated on platina foil it fuses without coloring and evaporates in white vapor, partially decomposed leaving no traces.

M. Lebaigne, of the analytical laboratory of the Pharmacie Central de Paris, in a mean of two analyses obtained $C51.33$, $H6.85$, $O41.82 =$ to $C^{39}H^{39}O^{30}$.

The inert crystalline substance is neuter and contains no nitrogen. It is insoluble in chloroform and ether free from alcohol, but soluble in alcohol, especially hot; water dissolves it but slightly. Sulphuric acid is colored purplish red; nitric and muriatic acid are not colored, and when heated it fuses and is consumed without residue.—*Jour. de Pharm.*, Avril, 1869.

ON THE BEHAVIOUR OF MANNITE TO ALKALINE SOLUTION OF COPPER.

By C. SCHEIBLER.

If caustic lime and precipitated oxide of copper are added to solution of mannite, both oxides are dissolved in different proportion; this solution kept at a temperature of 60 to $70^{\circ}C$. separates cuprous oxide. In the presence of sufficient quantities of lime and cupric oxide and under the same external conditions, the reduction continued for several months without becoming finished.

The liquid filtered from the cuprous oxide had a blue color from dissolved cupric oxide, which was removed, together with the lime, by carbonic acid. The filtrate contained, besides unaltered mannite, the lime salt of the acid formed by the decomposition of the former. Neutral acetate of lead was without action; but the basic salt produced a precipitate soluble in an excess of the reagent. The white lead salt was well washed, decomposed by sulphuretted hydrogen, and the filtrate evaporated on the water-bath.

The acid thus obtained is a colored syrup, remaining liquid even over sulphuric acid. It decomposes energetically the alkaline carbonates, reduces, when heated, ammoniacal solution of silver,

forming a dull mirror, but does not effect the solution of cupric oxide in potassa; it prevents, like all nonvolatile organic acids, the precipitation of ferric oxide by ammonia; all its salts appear to be soluble in water and alcohol, with the exception of the basic lead salt.

The author used pure mannite for the above experiments, and satisfied himself of the total absence of glucose, cane sugar and allied compounds. The filtrate from the insoluble lead salt yielded, by proper treatment, the greatest portion of the mannite without alteration.

These experiments prove that to distinguish the different kinds of sugar by their behaviour to alkaline solution of copper, is correct only as far as the time of their mutual action is taken into consideration.

That cane sugar, though in an inferior degree, possesses the power of reducing cupric oxide from its alkaline solution, has been known for some years; mannite has the same behaviour. The close relation between mannite and glucose was proven by Linnemann's discovery in 1862, that grape sugar in contact with nascent hydrogen is converted into mannite. $C_{12}H_{12}O_{12} + 2H = C_{12}H_{14}O_{12}$ (mannite).--*Chem. Centralbl.* 1869, No. 6, from *Zeitsch. d. Ver. f. Rübenzucker Indust.* xiv, 849, xvi, 670.

ON THE INFLUENCE OF DRYING ON THE ACTIVE PRINCIPLES OF PLANTS.*

BY DR. LEOPOLD SCHOONBROODT, Apothecary at Liege.

The author extended his examination to 29 plants, selected for the importance and frequency of their use in medicine. The process of examination was based upon the principles of Stas' method.

The carefully selected plants, when possible collected of wild growth, were divided into two equal parts, one of which was dried, if necessary, with artificial heat, then powdered, the loss in drying replaced by water, after maceration for 24 hours dis-

* Condensed from Wittstein's *Vierteljahresschr. für prakt. Pharm.* 1869, p. 73-110. The author, who died Dec. 1, 1866, was by the Société Royale des Sciences Médicales et Naturelles de Bruxelles, awarded a gold medal for this essay, which was published in *Journ. de Medic. de Brux.* 1867 and 1868.

placed with 95 per cent. alcohol, and the tincture treated like that of the fresh portion.

The other half of the fresh plant was reduced to small fragments, macerated with 95 per cent. alcohol for 24 hours, then expressed and again macerated as before. The liquids were united, filtered and distilled at a temperature of 56 to 60°C, the residue filtered and the filtrate evaporated over sulphuric acid under a bell glass; the residue upon the filter was kept separate.

The treatment of plants containing alkaloids was modified by adding tartaric acid to the tincture, to insure the solubility of the alkaloid in the aqueous solution of the alcoholic extract.

Treatment of the dry extract. 1. *Plants with alkaloids.* The dry extract was mixed with its own weight of burned lime, the mixture treated with twice the weight of 95 per cent. alcohol, and after 24 hours with four parts of ether, well agitated and then decanted; the sediment was twice treated in the same manner. The liquid was evaporated spontaneously, the residue dissolved in dilute sulphuric acid, filtered, precipitated by carbonate of potassa and dissolved by absolute alcohol.

This second evaporation usually yielded the alkaloid crystallized, particularly from the fresh plants. In the case of liquid alkaloids, caustic instead of carbonate of potassa was taken, and ether in place of alcohol; after proving its identity, the quantity of the alkaloid was estimated by titration with oxalic acid.

The comparative treatment of plants with alkaloids frequently gave very exact results, particularly when the alkaloids or their salts are crystallizable; this was less frequently the case when the plants contained no alkaloids and the active principle is incompletely characterized.

2. *Plants without alkaloids.*—The dry extract was treated with strong ether, and the filtrate evaporated spontaneously; the undissolved portion was treated with a mixture of 8 vol. strong ether and 2 vol. 95 per cent. alcohol, and the filtrate evaporated spontaneously. The residue was treated with cold distilled water, and the liquid evaporated over sulphuric acid.

The following contains the results obtained by the author with the most important drugs.

<i>Plants and when collected</i>	<i>Tincture.</i>	<i>Distillate.</i>	<i>Residue on Filter.</i>	<i>Extract.</i>	<i>Treatment with CaO and Alcoholic Ether.</i>
<i>Atropa belladonna.</i> Leaves, June, fresh.	Dark green, bitter.	Almost inodorous, tasteless, no reaction.	Deep green, almost wholly chlorophyll.	Dark brown; faint odor, intense taste.	White, amorphous, alkaline. * Yields 0.53 grm.
Dried.	Brown yellow, bitter.	Inodorous, tasteless.	Brown, resinous, inodorous, sol. in ether.	Blackish; taste bitter and sweetish.	Crystallized with difficulty, but saturated same amount of acid.
<i>Hyoscyamus niger.</i> Leaves, June.	Deep green, odor virous, taste acrid.	Odor and taste faint, no reaction.	Dark green, soluble in ether, apparently fat and chlorophyll.	Brownish, bitter.	White, amorphous. By SO_3 and KOC_2O_2 colorless needles, yield 41 grm.
Dried.	Deep brown, inodorous.	Inodorous, tasteless.	Black, pitch-like, sol. in ether.	Brown, inodorous, bitter.	Uncrystallizable, faint alkaline reaction.
<i>Datura stramonium.</i> Horb, July.	Dark green, acrid and bitter.	Weak, disagreeable odor and taste.	Blackish; virous odor; fat, resin and chlorophyll.	Light brown, bitter, somewhat acrid.	Crystalline, bitter, acrid, yield 0.65 grm.
Dried.	Brown, bitter.	Inodorous, tasteless.	Blackish, inodorous.	Brownish, bitter.	With difficulty crystallizable, same saturating power.
<i>Solanum Dulcamara.</i> Stems, late in Sept. The same results with the dried stalks.	Light greenish yellow; odor unpleasant; taste sweet, bitterish.	Disagreeable odor.	Dark green, slight odor.	Greenish brown, sweet, bitter and slightly acrid.	Amorphous; when reprecipitated from SO_3 and treated with alcohol; crystals of solanin. The lime retained a yellow amorphous glucoside, probably picroglycon.
<i>Colehitum autumnale.</i> Corns, November.	Yellowish, sweet and burning taste.	Acid reaction; slightly acrid.	Greenish; faint odor of benzoin.	Orange yellow.	Alkaline needles intermixed with greenish amorphous acid matter, acids and alkalis destroy alkaline reaction and crystalline structure.
Dried.	Darker; more bitter.	No reaction, odor or taste.	As above.	Brownish.	White amorphous colchicin, without alkaline reaction.
<i>Aconitum Napellus.</i> Cultivated leaves, June.	Deep green; bitter, then acid.	Acid reaction; burning taste; salts of Ag, Au, and Pt, reduced.	Dark green; virous odor; taste slightly acid and bitter.	?	The result treated like dulcamara yielded 30 grm. needles (aconellina?) and about 30 grm. oily aconitin, gradually becoming resinous.
Dried.	Brown; bitter acrid.	No reaction, odor or taste.	Blackish; slightly acid and acrid.	?	Amorphous, resin-like.
<i>Conium maculatum.</i> Leaves, May.	Green; repulsive odor; very acrid.	Neutral, tasteless, faint narcotic odor.	Green, oily; virous odor.	Light-brown.	0.35 grm. conia.
Dried.	Light brown; taste weaker.	Nearly inodorous.	Black, resinous, inodorous.	Brownish.	0.10 grm. conia and products of decomposition.

* From 250 grammes of the fresh drug; the subsequent figures refer to the same weight.

The leaves of *Anemone pulsatilla*, collected in April, yielded fresh, but not dried, anemonin, little amorphous alkaloid and a yellow, very acrid resinous matter.

Chelidonium majus, (herb) collected in July, yielded, after drying, only chelidonina, but no chelerythrina.

Nicotiana tabacum, (leaves) collected in July, yielded two grm. pure nicotina; after drying scarcely half the quantity.

Digitalis purpurea, (leaves, June). The extract yielded to alcoholic ether 0.60 grm. of a straw yellow, very bitter substance; from the dried leaves a little less and deeper yellow.

Menyanthes trifoliata, (leaves, August), yielded 0.45 grm. menyanthin; from the dried leaves uncrystallizable.

Marrubium vulgare, (leaves and tops, June), yielded 0.70 crystallized marrubiin; from the dried, about one half.

Tanacetum vulgare, (flowers, July). Bitter principle, darker from the dried.

Absinthium vulgare, (leaves and tops, cultivated, July). The dried yields less aromatic preparations and an extract-like, bitter principle.

Ergot, (July). Carefully dried and powdered, it was divided into two parts, one of which was kept under alcohol in a well filled bottle, the other kept dry in a paper box for ten months, after which time it was macerated for fifteen days in the same quantity of alcohol. The two portions were then treated exactly alike. The ergot was exhausted with alcohol in a displacement apparatus, the tincture evaporated in a water-bath and finally over sulphuric acid. The extract was treated with distilled water, and the filtrate concentrated at the ordinary temperature over sulphuric acid.

The extracts, exhausted by water (loss about one-fourth,) yielded to ether about five-sixths of their weight, and the residue, about one-eighth of the alcoholic extract, was a red granular powder—Wiggers' ergotin. The ethereal solution, on evaporation, yielded fixed oil and crystallized cholesterin. The fixed oil, from the old ergot, was orange red, that from the fresh (kept under alcohol) was thinner and orange yellow. No other difference was thus far observed.

The concentrated aqueous solution of the alcoholic extract had

separated more of Wiggers' ergotin and crystals of mycose; the clear liquid was evaporated as before to near dryness, (the residue of the fresh was more granular) and, since pure ether was without effect, treated with alcoholic ether, which on evaporation yielded yellow acicular crystals, regarded as pure Bonjean's ergotin, (0.25 per cent. from the fresh, 0.20 from the old). The extract treated with alcoholic ether was entirely soluble in absolute alcohol except a little mycose; on spontaneous evaporation a little more mycose was separated, and then a reddish (rather darker from old ergot) oily mass was left, consisting mainly of lactic acid.

Rhus radicans, (leaves, July). The distillate from the dried leaves was without odor and acid reaction, and did not reduce the salts of silver, platinum and gold.

Ruta graveolens, (leaves, July). The tincture of the fresh leaves deprived of the alcohol by distillation separated an odorous green oil, which, removed by ether, left a yellowish granular glucoside of a bitter, somewhat acrid taste. From the dried leaves the oil was not obtained, and the glucoside merely as a brown extract.

Valeriana officinalis, (root collected in September, from high dry situations). The resin of the dried root is more acrid than in the fresh. 250 grm. of the former yielded 1 grm. valerianic acid. The distillate from the fresh root was neutral, had a slight odor, but on exposure to the air in the presence of alkalies, yielded 1.5 valerianic acid.

Prunus lauro-cerasus, (leaves, June). Lose all their virtues by drying.

Bryonia dioica, (root, October). Results alike from the fresh and dried.

Inula Helenium, (root of second years growth, October). The constituents are somewhat altered. The sugar is obtained from the fresh root in white hexagonal prisms, from the dried root granular.

Saponaria officinalis, (root, October). The saponin from the fresh root is white granular, from the dried amorphous colored.

Juniperus Sabina, (leaves and tops, July). The dried yields a browner, less odorous, more acrid tincture.

Aspidium Filix mas, (rhizome, September). The tincture of the dried browner and more acrid, but weaker in odor than from the fresh. The distillate from the latter has a disagreeable odor and taste, reduces the salts of the noble metals, and evaporated with potassa, leaves a scap-like residue,—properties which are not observed in the distillate of the tincture from the dried rhizome.

His experiments lead the author to the following conclusions :

1. Dried plants never represent entirely the fresh. The generation of valuable constituents during the drying process, as valerianic acid in valerian, must be regarded as exceptional.

2. The alterations produced in drying consist in the volatilization of a portion of the volatile constituents and in the oxidation of most of the fixed and the remaining volatile constituents. During the drying process the water in the cells is partly replaced by air, the influence of which upon the remaining constituents is intensified by the porosity of the dry plant.

3. It is always advantageous to use fresh plants for the preparation of alkaloids and other active principles, and to employ as low a temperature as possible.

4. The composition of the fresh plants is more simple than is frequently supposed; they generally contain, besides cellulose, the saccharine, starchy and albuminous principles and the mineral salts, a volatile principle, either a carbohydrogen or aldehyde; a bitter or acrid principle, which is either an alkaloid or glucoside; a coloring principle and often fat.

5. To reduce the injurious influence of the atmosphere, it appears advisable to hasten the drying and then compress the dry plants, as is the custom in North America. J. M. M.

ON A NEW FALSIFICATION OF SAFFRON.

By M. ANEDÉE BLACHEZ.

The author finds this saffron in French commerce. At first view it appears all right, has a good color, a well marked odor, contains no mixture of carthamus or marigold, and pressure on paper does not indicate an excess of moisture.

Its density is considerable, but it contains neither lead nor

sand. The fraud consists in carbonate of lime, or chalk, colored with some organic coloring matter, which is duller than that of saffron, and aids in preventing its ready detection by the eye.

The author supposes the adulteration to be formed into a paste, probably with honey, by which it is fixed on the surface of the stigmas, sometimes singly and sometimes coherent in bundles of five or six filaments.

When kept very dry portions of the paste separate and are detectable. Of three samples, obtained from different druggists, M. Blachez has found from 12.5 to 16 per cent. of carbonate of lime, which, in connection with the vehicle and moisture, make probably 20 per cent. in all.

The chalk is easily washed out, precipitates to the bottom of the macerating vessel, and can readily be recognized by its effervescence with muriatic acid and its reaction with oxalic acid.

Jour. de Phar., Avril, 1869.

ON SACCHARATED OXIDE OF IRON.

By S. SIEBERT, of Gottingen.

Two parts of iron are dissolved in 24 parts of nitric acid, of specific gravity 1.2; the filtrate is evaporated to 15 parts; when quite cool 12 parts of sugar are dissolved in the liquid, and an excess of a solution of 12 parts of sugar in 12 parts of 20 per cent. water of ammonia is added.*

The mixture is dark brown, at first gelatinous, but after agitation becomes thinner and clearer, and contains then, besides nitrate of ammonia and an excess of sugar, the combination of sugar with ferric oxide. This compound is precipitated by mixing, after 24 hours, the clear liquid with 4 or 5 times its volume of strong alcohol. The yellowish brown, flocculent, not very voluminous precipitate is collected upon a filter, washed with

* If the sugar was dissolved in the warm iron solution oxalic acid would be formed, which would afterwards be precipitated by the alcohol as oxalate of ammonia, and render the preparation poisonous. Instead of 20 per cent. water of ammonia, which during the solution of the sugar would lose much gas, it appears advisable to dissolve the sugar at a low temperature in the officinal 10 per cent. water of ammonia—WITTSTEIN.

alcohol, pressed between bibulous paper, and the still moist mass intimately mixed with its own weight of powdered sugar, and dried by a moderate heat, when some ammonia is evolved, probably from the decomposition by drying of a precipitated compound of ammonia with sugar. The dry, inodorous mass may be triturated with water to a syrup, again precipitated by alcohol, the precipitate treated as before, well washed upon a filter with alcohol, pressed between bibulous paper, dried at ordinary temperature, and rubbed to powder.

Thus prepared it forms a dark brown inodorous and tasteless powder, readily soluble in water and diluted alcohol; the solutions are precipitated by alcohol, the latter also by ether. On prolonged standing, and at once by boiling, the whole quantity of iron is precipitated as an insoluble compound with sugar; the alcoholic solution is more stable. The aqueous solution is not altered by ferrocyanide or sulphocyanide of potassium; tannin after some time produces a precipitate; sulphhydric acid and sulphide of ammonium precipitate the iron, from very dilute solutions slowly. Alkalies and neutral salts do not decompose the compound, which, however, is separated from its aqueous solution by their halogen compounds. Even weak acids produce decomposition, and ferrocyanide of potassium separates then, gradually, Prussian blue. On heating, the compound loses water, and with it its solubility. Analysis leads to the formula, $C_{12} H_9 O_9 + 2Fe_2 O_3 \cdot 6HO$, which requires $43.59 Fe_2 O_3$.

For pharmaceutical purposes the product obtained from the first precipitation with alcohol, mixing with sugar and drying is used. It has the same chemical properties as the pure compound, but differs from it by a lighter color and a sweet taste. It contains 10 per cent. metallic iron, $= 14.28 Fe_2 O_3$. The author calls it *Ferrum oxydatum saccharatum*.

By dissolving this preparation in little water, and mixing it with simple syrup, a *syrupus ferri oxydati* may be made, of any desired strength. It has a fine red brown color, is perfectly clear, and has a purely sweet taste. It may be aromatized by orange flower water, &c. The dry preparation may well be used in mixtures.

The alcohol is recovered by distillation; to remove the ammo-

nia, the latter is to be previously neutralized by an acid—*Wittst. Viert. Schr.* 1869, 112—114. *From Pharm. Centralhalle*, 1867, IV. 41.

ON HYDRATED OXIDE OF IRON SOLUBLE IN SUGAR
SYRUP AND IN GLYCERIN.

By DR. H. KÖHLER and DR. H. HORNEMANN.

Fleischer's capsules of saccharate of iron, and Wagner's and Grossinger's ferrum oxid. dialysatum, consist mainly of a very basic oxychloride of iron, have a styptic taste, blacken the teeth and change partly into a gelatinous condition. Without knowing of Siebert's method, the process of the authors is similar, but differs in the use of ferric chloride and caustic soda instead of the nitrate and caustic ammonia; both processes are still expensive, the former owing to considerable loss of alcohol.

Equal weights of ferrum sesquichloratum solutum* and simple syrup are mixed, hydrated soda is then added until the precipitate is entirely redissolved, the filtrate is mixed with a large quantity of distilled water and boiled for some time. The presence of the neutral salt Na Cl is sufficient to precipitate the hydrated oxide of iron in its soluble modification; the precipitate is collected upon a filter, washed until the filtrate ceases to precipitate silver salts, dissolved with powdered sugar, the solution evaporated to dryness by means of a water bath, and the residue reduced to powder.

Thus prepared it has the following properties:

1. It yields with water a yellowish brown, perfectly transparent, chemically indifferent solution, entirely free from styptic taste, and not precipitated by dilution with water or by boiling.

2. Phosphates, carbonates, benzoates, succinates, tannates, sulphocyanides, ferrocyanides and arseniates of alkalies have no effect on the solution; precipitates are produced by sulphide of ammonium and tincture of galls.

3. An aqueous solution of bibasic phosphate of soda does not produce a precipitate in the cold or on boiling.

* The preparation of the Prussian Pharmacopœia contains 15 per cent. Fe.

4. A minute quantity of a neutral salt added to the concentrated solution separates gradually the entire quantity of the hydrated ferric oxide; the same effect is instantly produced by diluting and boiling the mixture.

5. Organic or mineral acids transform this modification of the oxide into the ordinary kind, the solution becomes lighter in color, and is then affected by the usual reagents.

6. Bitter principles, like salicin, cetrarin, &c., also digitalin and the vegetable alkaloids, particularly those of morphia, also small quantities of the volatile oils, separate the hydrated oxide in its soluble modification.

By triturating the freshly precipitated oxide in a mortar, to promote the evaporation of the water, and testing the solubility in syrup and glycerin, Hornemann found that the oxide was completely soluble therein when it contained 7.2, 7.03, and 6.6 equiv. of water, but did not yield a clear solution when it contained 5.8 equiv. The authors conclude that this soluble oxide of iron contains 6 equiv. of water of hydration.

Regarding its therapeutical use, the authors state:

1. That it is resorbed is proven by its secretion through the kidneys.

2. After its use for several weeks, in the form of syrup containing 2 per cent. oxide, or as troches, coating of the tongue, blackening of the teeth and constipation are not observed; the preparation agrees well with chlorotic women, weakened by hemorrhage in abortion, with reconvalescents and weak children; if it should show a tendency to diarrhœa, it must be discontinued for some days.

3. The preparation may be given with fresh milk of an alkaline reaction, with arrowroot, soups of meal and extract of beef, beef tea, coffee and chocolate, the taste of which is not affected.

4. All kinds of wine may serve as vehicles; it may be added to the infusion of bitter remedies like gentian, juglans, quassia, menyanthes and colombo, or united with their extracts; with cinchona it can only be given in the forms of pills.

5. Cold infusions of orange peel and cinnamon may serve as vehicles; with other aromatics it can only be given in the form of powder.

6. It does not possess any astringent properties and cannot be given with infusions of remedies containing tannin.

7. With resolvents and hepatic remedies (aloes, gall, taraxacum, carduus bened., &c.) it can only be given in pilular form, and with solution of iodide of potassium only by taking the iron syrup afterwards.

8. It must take the place of all other iron preparations as an antidote to arsenic. Rabbits were given 0.1345 grm. As O₃, and afterwards, in intervals of 10 minutes, four doses of 2 grm. saccharated oxide of iron; they fed again 18 hours afterwards. When poisoned the quantity of urine was very small, and it contained albumen; after 18 hours the secretion of urine was regular, and both arsenic and iron were found in it.

Halle, July 15th, 1868.

—*Buchner's N. Repert.*, 1869, 36—42. *From Berlin. Klinische Wochenschr.*

LIQUID SULPHUROUS ANHYDRIDE.

By M. SESTINI.

M. Sestini (Bull. de la Soc. Chem.) has published some researches on liquid anhydrous sulphurous acid as a solvent.

If three decigrams of white phosphorus is put in contact with three cubic centimetres of this acid, it diminishes in volume gradually and the liquid assumes a light yellow color. When the sealed tube is put in the dark neither the liquid nor the phosphorus are luminous. After some days, having opened the tube, the liquid becomes again phosphorescent in the dark and leaves, on evaporation, a small residue of white phosphorus.

Iodine is slightly dissolved, causing a reddish yellow color.

Bromine dissolves in sulphurous acid; sulphur, on the contrary, is very little soluble in this liquid.

If a few drops of anhydrous sulphurous acid are thrown into a tube containing normal nitric acid a white crystalline product is obtained, as in the lead chambers, and disengages nitrous vapors.

A mixture of one volume of sulphurous acid with three volumes of bisulphide of carbon by prolonged contact (20 to 25 days) became a homogeneous liquid.

Benzine, ether and chloroform dissolve anhydrous sulphurous acid; the two first afford yellow solutions.—*Jour. de Pharmacie, Mai*, 1869.

THE ACTION OF LIGHT ON CITRATE OF IRON AND QUININE.

By C. H. WOOD, F. C. S.

I was engaged about two years ago in preparing some citrate of iron and quinine, and by scaling my product in a hot cupboard I obtained good sized scales—bright, of a golden green color, and perfectly soluble in water. Remembering, however, that potassio-tartrate of iron gives far better scales when scaled in the sun's rays, than by any artificial heat (a fact I learnt from Mr. Braithwaite), I spread some of my solution on plates of glass, and exposed them in a window to an April sun. I was soon surprised, however, to observe the citrate becoming darker in color and exhibiting a very good photographic image of some bottles which cast their shadows on the plates. After a time, but while still wet, it gradually became opaque, as if the quinine had been precipitated. It ultimately came off in minute brownish colored powdery scales. The two results from the same solution were as different as they possibly could be. The sun-scaled specimen when put into water became white and opaque, and only dissolved after the lapse of a long time. The scales produced by heat, when thrown on water, rapidly melted, retaining their perfect transparency to the last. The salt contained 17 per cent. of quinia.

I then thought it would be worth while to ascertain whether the strong solution only is subject to this change, or whether the finished product would be also affected in like manner by exposure to light. About a drachm of the good citrate, scaled by heat and dissolving freely without opacity, was therefore spread out on a sheet of white paper and laid in the sun's rays. After a quarter of an hour's exposure, it was perceptibly deepened in color. In twenty minutes it had become brownish, and when put into water became at once white and opaque. The white spongy bits floated about in the liquid, and gradually but slowly dissolved. Some samples of citrate of iron and quinine were then obtained from

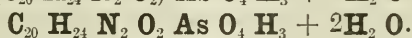
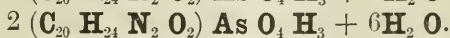
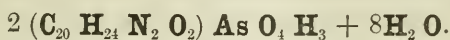
several different makers, and exposed in the same manner. All were more or less similarly affected, but nevertheless the results varied considerably. In some cases the salt was even more decidedly affected than my own had been; but in others the result was less injurious, and when the scales, after insolation, were treated with water, although they became white and opaque, their ultimate solution took place readily. Portions of these exposed specimens were wrapped up and put away in a dark place for some time; upon subsequently examining them, they had to a great extent passed back to their original condition. It has often happened that samples of this salt have been disparaged on account of their difficult solubility; from these results, however, it would appear possible that this defect has not been so much due to any fault in the manufacture as to some accidental circumstance in the preservation of the product. Should time and opportunity offer, I hope on some future occasion to investigate more fully the nature of the change which thus occurs in citrate of iron and quinine by exposure to light.—*Pharm. Jour., Lond., May, 1869.*

THE SOLUBILITY AND ESTIMATION OF QUININE.

M. Fausto Sestini (Bulletin de la Société Chimique, Février, 1869) has made some new determinations of the solubility of quinia in pure water. He finds that one part of quinia requires 1667 parts of water at 20 C., and 902 parts at 100 C. for its solution. One part of the hydrate of quinia (with $3\text{H}_2\text{O}$) requires 1428 parts at 20°, and 773·4 at 100° C. The alkalis diminish the solubility of quinia, and soda to a greater extent than potash; a ley containing one-sixth of soda dissolving none. The author has analysed several arseniates of quinia, in which he estimated the alkaloid by the following method: The salt is dissolved in water acidulated with sulphuric acid, and the quinia precipitated by a solution of carbonate of soda; the liquor is evaporated to dryness without filtering, the residue treated with water, the quinia collected on a filter, washed until the filtrate ceases to react with nitrate of silver, and then dried at 100 C., and weighed. The filtered liquor and washings are eva-

porated to dryness, and the residue treated with alcohol, to remove the quinia present. The alcoholic liquid is evaporated, dried at 100 C., weighed, and then calcined to deduct the inorganic matter taken up by the spirit.

When a sulphuric solution of quinia is precipitated by ammonia or soda, the precipitate must be washed until the washings cease to affect chloride of barium, because some subsulphate of quinia is always thrown down with the precipitate. To recover the quinia dissolved by washing, the liquors are evaporated to dryness and the residue treated with alcohol. M. Sestini gives the following formulæ for the arseniates of quinia analysed by him :



—*Pharm. Journ., London, May, 1869.*

ON THE COLORING PRINCIPLES OF BUCKTHORN BERRIES.

By W. STEIN.

The author used for his experiments olive green berries. After having removed the fat, by boiling with petroleum ether,* a portion was exhausted with water and alcohol, and the liquids precipitated by acetate of lead, &c. Another portion was exhausted by 80 per cent. alcohol, water and ether. Thus the author succeeded to obtain a pure coloring principle soluble in water (rhamnin), one insoluble in water (rhamnetin), a principle precipitated by gelatin (rhamnotannin), a nitrogenous compound (rhamnin ferment), and a gum (rhamnin gum).

Rhamnin is contained in the aqueous infusion besides gum and tannin; the gum is first precipitated by alcohol, after which ether separates the coloring-matter in yellow floccules, which, washed with ether and dried in vacuo, constitute a yellow mass in a spongy condition like tannin. The floccules liquify very readily before they are dry, and leave then, on evaporation, a gum-like mass. If an alcoholic solution of rhamnin is evapo-

* The so-called benzine of American commerce.

rated spontaneously, or mixed with some ether, microscopic yellow needles are obtained. Rhamnin has but little taste; it dissolves in water, alcohol, and acetic acid, sparingly in absolute alcohol, scarcely in ether and chloroform. The golden yellow color of the aqueous solution changes, on exposure, to brown. The cold solution is not affected by the acetates of copper, lead, zinc or alumina, the chlorides of tin and mercury, nitrate of silver, gelatin, caustic baryta, sulphate of soda and chloride of sodium. Ferric chloride colors the solution olive green, nitroprusside of sodium, deep brown red; chlorinated lime, dark green. The alcoholic solution is precipitated by lead salts.

Dilute sulphuric acid and the above mentioned ferment split rhamnin into rhamnetin and a gum-like body which reduces alkaline solutions of cupric oxide. Cloth upon which alum or tin-salt had been used as a mordant were not dyed by solution of rhamnin; an intense color was, however, produced after the addition of a little rhamnin ferment. Brown buckthorn berries, which contain much rhamnin, may be used with advantage for dyeing by the addition of an infusion of the olive green fruit. The author could not, by boiling, convert the insoluble rhamnetin into the soluble rhamnin, as the statement of Kane seems to indicate.

It is difficult to free the rhamnin from the last traces of a nitrogenous compound. On analysis the author obtained results indicating a composition similar to that of ruberythrinic acid and of quercitrin.—*Zeitschr. f. Chemie*, 1869, 183, 184, *from Journ. f. prakt. Chem.* cv, 97.

ACID PROOF CEMENT.

Mr. Editor :—Thinking that the following suggestion may be of use to or improved upon by some of the readers of the *Journal of the Franklin Institute*, I offer it with these ideas for what it may be worth. It frequently happens that the chemist requires some means for protecting cork from the destructive action of vapors such as arise from boiling nitric acid. I think that the plan here mentioned may possibly meet this requirement. Finding it necessary to connect a glass tube with a wide-mouthed

flask, and in so doing to use a cork which was exposed to the action of the fumes from boiling nitric acid for several hours, I found the best preservative to consist of a coating of silicate of soda and powdered glass. The cork having been bored to suit the size of the tube, was soaked for two or three hours in a solution of silicate of soda, consisting of one part of commercial concentrated solution, to three parts of water. The tube was next inserted, and when dry, the cork was covered with a paste made by mixing the condensed solution of the silicate with powdered glass in such proportion as to form a mass of about the same consistence as that of putty. This is spread on the under surface, and then washed with a solution of chloride of calcium. It soon hardens, so I think it advisable to make the connection with the flask whilst the paste is in a plastic state, and to allow it to become solid before applying heat to the vessel containing the acid.

Corks protected in this manner were but slightly acted upon, though remaining over the boiling nitric acid more than four hours, and over hot acid for ten. In some instances, when not entirely covered, the vapor softened the cork beneath the silicate to the depth of about a quarter of an inch, but the cement proved sufficiently strong to form a compact diaphragm, enabling the tube to be removed from the flask without danger of the fluid contained being contaminated. I would suggest also the application of this cement as a luting for chemical apparatus for general use, as I find that it remains unaffected even when immersed in strong nitric, sulphur, or muriatic acids. The immersion in these liquids was made whilst the plaster was still soft, with the only perceptible effect of hardening the same immediately. Yours, &c.,

ROB'T. F. FAIRTHORNE.

PHILADELPHIA, March 22d, 1869.

—*Jour. Franklin Institute, April, 1869.*

ARTESIAN WATER OF CHARLESTON, S. C.

BY PROF. C. U. SHEPARD, JR.

The analysis of the water of the artesian well of this city may interest some readers, not only the scientific who may possibly

draw important inferences from a knowledge of its composition, since it comes up from below the layer of phosphatic nodules (sixty feet from the surface), but also travellers and health-seekers, who every season drink at this agreeable well, which is also quite popular among our citizens.

The following analysis is the average of several, completed at intervals of a few weeks during last winter and spring. Slight, but unmistakable, changes were noticed in the proportions of some of the ingredients during these investigations. There are two wells; only one, however, is completed. This, the old one, is about 1250 feet deep. The temperature of the water at the spout is 87° F. (or 30·7° C). Specific gravity (taken at 15° C.), is 1·0015. The amount of solid ingredients in the water = 0·228—0·234 per cent.

In 100 parts solid ingredients:

Bicarbonate of soda	.	.	.	52·749
Chlorid of sodium	.	.	.	47·051
Bicarbonate of lime	.	.	.	0·0883
Bicarbonate of magnesia	.	.	.	0·01375
Silica	.	.	.	0·00102
Phosphates of lime, iron and alumina	.	.	.	0·0004
Organic matter	.	.	.	0·0017
Sulphuric acid in traces.				

In 100 parts well water—

Bicarbonate of soda	.	.	.	0·1435
Chlorid of sodium	.	.	.	0·128
Bicarbonate of lime	.	.	.	0·000273
Bicarbonate of magnesia	.	.	.	0·0000323
Silica	.	.	.	0·0000238
Phosphate of lime, iron and alumina	.	.	.	0·0000093
Organic matter	.	.	.	0·0000467
Free carbonic acid	.	.	.	0·0018
				<hr/>
				0·27366

In 100 imperial gallons (at 15° C.), are contained about one and a half pounds bicarbonate of soda and one and a quarter pounds common salt.

CHARLESTON, S. C., Jan. 21, 1869.

—*Am. Jour. Sciences and Arts May, 1869.*

REDUCTION OF OXIDES BY HYDROGEN.

M. W. Müller has instituted a series of experiments with the view to determine precisely the temperature at which the oxides of metals begin to be reduced by hydrogen gas. He has experimented with oxides of various metals prepared in various ways, and also determined the effect of other gases, nitrogen, and aqueous vapor, upon the temperature of incipient reduction. Oxide of iron prepared by cautiously heating metallic iron in contact with air was found to get reduced at 285° C.; the same oxide prepared from nitrate of iron was reduced at 286° ; when rather moist hydrogen was applied and the oxide of iron prepared from oxalate of the protoxide, the temperature of reduction was found to be 278° . Oxide of copper prepared from the sulphate of that metal and precipitated by caustic soda, and previously heated to 300° , was found to become reduced at 135° ; strongly ignited oxide of copper became reduced at 142° on an average of five experiments; oxide of cobalt becomes reduced at about 332° ; oxide of zinc could not be reduced at a temperature whereby glass became fused; oxide of tin, about 174° ; oxide of lead, at from 310° to 315° ; peroxide of mercury, 230° ; oxide of silver, at between 73° and 78° . The experiments have been extended to the chlorides and sulphides of some metals. Chloride of gold does not appear to be acted upon below 200° , but at a higher temperature an explosion took place. The action with chloride of platinum was rather strong at 85° , and rather violent at 165° ; reduction of the metal took place. The chlorides of silver and lead are not reduced below the boiling point of mercury, but requires a red heat; sulphide of gold is reduced at 200° , while sulphide of platinum is reduced at the ordinary temperature, sulphuretted hydrogen gas being formed in both cases.—*Lond. Chem. News, April 9, 1869, from Poggen-dorff's Annalen*, vol. 136, part i, 1869.

QUANTITATIVE ESTIMATION OF TARTARIC ACID.

Dr. Martenson, First Assistant in the Chemical Laboratory of the Pharmaceutical Institute of Dorpat, Russia, has made a series of experiments, with the view to obtain a trustworthy

and readily executed method of quantitative estimation of tartaric acid. After first ascertaining by a series of experiments that tartrate of lime is less soluble in water than is commonly reported in books (he ascertained that 1 part of the aforesaid salt requires at 18° C. 2388·26 parts of water for complete solution), he discovered the almost complete insolubility of the tartrate of lime in alcohol of 85 per cent. strength. In order to estimate the tartaric acid in tartrate of potash, for instance, the salt is dried at 100° C., dissolved in a small quantity of distilled water, next pure chloride of calcium solution is added, with the precaution to avoid excess thereof, afterwards a few drops of lime-water are added, and the porcelain capsule wherein this operation is performed is left standing for some hours. A crystalline precipitate is thus obtained; it is collected on a filter previously dried at 100° and weighed; the supernatant fluid is first poured upon the filter, then the precipitate is collected and washed with strong alcohol, the precipitate and filter are thoroughly dried at 100°; the precipitate is weighed as—



It is of importance to take care to use a porcelain basin, the glaze of which is quite free from cracks, otherwise the precipitate has a strong tendency to adhere to such portions of the basin. When either hydrochloric or nitric acids are present along with tartaric the fluid is first nearly neutralised with pure carbonate of lime and warmed to expel carbonic acid, while the last traces of acid are removed with lime-water. The presence of either chloride of ammonium or chloride of calcium in excess interferes with the correctness of the results and makes it necessary to add alcohol to the liquid to be operated upon. Results are accurate when proper care is taken.—*Lond. Chem. News*, April 9, 1869, from *Pharm. Zeitschr. f. Russ.*, 1869, No. 1.

SALT DEPOSIT NEAR BERLIN.

According to M. Jahn, a stratum of rock salt, 669 feet thick, has been discovered near Berlin, at Sperenburg, and from the borings is considered a highly valuable mineral deposit.—*Ibid.*, from *Ibid.*

ON FRACTIONAL PERCOLATION.

BY C. LEWIS DIEHL.

The recent papers of Dr. E. R. Squibb *on the Pharmacy of the Cinchonas* and *on Repercolation*, induced me to experiment upon *senna* and *rhubarb*, with a view to the preparation of fluid extracts from them, without the aid of heat. For several reasons I have been unable to conclude my experiments; but during their execution some ideas suggested themselves, which may be of interest to pharmacists, and are, therefore, offered for publication.

The adoption of fluid extracts by the revisors of our pharmacopœia has opened a large and instructive field to the pharmacist. From the beginning of their introduction the pharmaceutical mind has been agitated with plans for their production in such state that they should accurately represent a normal quantity of material. How far this has been accomplished it is difficult to say, as there have been but few attempts made to determine their absolute strength. The subject of heat, in its influence on this class of preparations, early attracted attention, and has been conceded to influence their character decidedly, and in many cases injuriously. Even when not directly injurious to any active proximate constituent of the drug, its application may become indirectly injurious, by rendering an inert principle insoluble, thereby causing some of the active matter to be precipitated with it mechanically; or by the evaporation of a hydro-alcoholic percolate, for the purpose of concentration, so to alter the relation of the alcohol to water as to render it incapable of holding some of the valuable constituents in solution. These difficulties were in part avoided by the manipulation suggested by Prof. Graham in 1858, and subsequently by Prof. Procter in his report as a member of the Pharmacopœia Committee of the American Pharmaceutical Association. The improvement of Prof. Graham consisted in reserving the first and concentrated portions of the percolate, and evaporating the remainder to such measure that, when mixed with the reserved portion, the required quantity of fluid extract was formed. On this plan most of the formulas for the fluid extracts of our Pharmacopœia were constructed, and

they have proved reliable, as far as we are enabled to judge without actual analysis of the resulting preparations. Yet several objections to the process exist; the first being the one mentioned above with regard to the concentration of hydro-alcoholic percolates; the next, and most important one is, that, if a fluid extract is at all liable to be injured by heat, a portion at least is sacrificed, and we cannot obtain an absolute representative of a normal quantity of the drug. Dr. Squibb, by his experiments upon the fluid extracts of colchicum seed and of buchu, is satisfied that, by even ordinary care in percolation, the first twelve fluidounces of percolate from sixteen troyounces of the drug, will contain *two-thirds* of the soluble matter contained therein, and that the remaining *one-third* of soluble matter is weight for weight less active than the first *two-thirds*. Granting this to be true of drugs in general, and that the deficiency of activity in the last *one-third* will bring its actual value to *one-fourth*, there still occurs a great loss, if the drug is readily altered by heating. This must, for instance, be true of fluid extract of senna, in the formula for which all due regard has been paid to the changeable nature of the active principle; but as the first pint of percolate does not contain all the active matter of the senna, it follows that, in evaporating the subsequent percolate, a portion of activity is sacrificed, and that therefore a pint of fluid extract can not absolutely represent sixteen troy-ounces of senna. Similar objections pertain to the process for fluid extract of rhubarb. It was with a view to improving the process for these preparations, that I availed myself of the valuable hints contained in the papers of Dr. Squibb, modifying his suggestions as appeared to me desirable. In explanation of the heading to this paper I will say that I regarded the term *fractional percolation* more to the point than *repercolation*, in designating a process depending upon the percolation of *fractional portions* of a drug by one and the same menstruum.

Experiment 1.—Twenty-four troyounces of Alexandria senna in moderately fine powder was divided into portions of ten, eight and six ounces. The *first portion* (of ten ounces) was moistened with five fluidounces of diluted alcohol, and, after standing a short time, packed appropriately in a glass funnel, the surface covered with a disk of filtering paper, and sufficient diluted alcohol poured on, as required. At the expiration of about

three hours the percolate began to pass at the rate of thirty drops to the minute, and gradually faster, until towards the end of the process it passed at the rate of about eighty drops to the minute. The percolate was collected in the following fractions :

First fraction	—7.5 f. ounces	—designated	Reserve A.
Second	“ 6	“ “	Percolate No. 1 A.
Third	“ 10.5	“ “	“ “ 2 A.
Fourth	“ 31	“ “	Exhaust percolate A.

The *second portion* (of eight ounces) was moistened with part of *percolate No. 1 A*, packed as above, the remainder of the percolate poured on, and as soon as absorbed, followed by *percolate No. 2 A*, and this by diluted alcohol. The percolate was collected in the following fractions :

First fraction	—6 f. ounces	—designated	Reserve B.
Second	“ 4	“ “	Percolate No. 1 B.
Third	“ 6.5	“ “	“ “ 2 B.
Fourth	“ 27	“ “	Exhaust percolate B.

The *third portion* (of six ounces) was now treated with *percolates No. 1 B*, and *No. 2 B*, and diluted alcohol in the same manner as the second portion, and the percolates collected in the following fractions :

First fraction	—10.5 f. ounces	—designated	Reserve C.
Second	“ 22	“ “	Exhaust percolate C.

The *reserve portions* A, B and C were now mixed in an accurately tared flask, and after ascertaining the weight of the finished fluid extract, a fractional portion was evaporated as near to dryness as possible, in order to determine the amount of solid matter contained. The *exhaust percolates* A, B and C were also mixed and a fractional portion evaporated to dryness. The following is the result :

Amount of solid extract—

In 24 f. ounces of fluid extract	2,880 grains.
In 1 f. ounce “ “	120 grains.
In exhaust percolates for 24 f. ounces of fluid extract	432 grains.
In exhaust percolates for 1 f. ounce of fluid extract	18 grains.
From 1 troy ounce of Alexander senna,	135 grains.

Experiment 2.—Twenty-four troy ounces of the same lot of powdered Alexandria senna were exhausted according to the Pharmacopœia directions and three percolates obtained, as follows :

First fraction	—24 f. ounces	—designated	Reserve.
Second	“ 48	“ “	Additional percolate.
Third	“ 105	“ “	Exhaust “

Fractional portions of each of these percolates were evaporated with the following results :

Amount of solid extract—

In reserve for 24 f. ounces of fluid extract	2,304 grains.
--	---------------

In reserve for 1 f. ounce of fluid extract,	96 grains
In additional percolate for 24 f. ounces of fluid extract	886 grains.
In additional percolate for 1 f. ounce of fluid extract	37 grains.
In 1 fluid ounce of finished fluid extract	133 grains.
In exhaust percolate for 24 f. ounces of fluid extract,	168 grains.
In exhaust percolate, for 1 f. ounce of fluid extract	7 grains.
From 1 troy ounce of Alexandria senna	140 grains.

Summing up the results of the foregoing experiments it will be found that the fluid extract made by fractional percolation contains thirteen grains less of solid matter, in a fluidounce, than the officinal fluid extract, but on the other hand it contains one hundred and twenty grains of solid matter, that is not heated, while the officinal fluid extract contains but ninety-six grains.

Experiment 3.—Twenty-four troy ounces of India senna, in moderately fine powder, was treated by fractional percolation in precisely the same manner as indicated in Experiment 1, with the following result :

Amount of solid extract—

In 24 f. ounces of fluid extract	3,072 grains.
In 1 f. ounce “ “	123 grains.
In exhaust percolate for 24 f. ounces of fluid extract	520 grains.
In exhaust percolate for 1 f. ounce of fluid extract	21·5 grains.
From 1 troy ounce of India senna	149·5

Experiment 4.—A repetition of Experiment 2, substituting India for Alexandria senna, gave the following result :

Amount of solid extract—

In reserve for 24 f. ounces of fluid extract	2,400 grains.
In “ “ 1 f. ounce “ “	100 grains.
In additional percolate for 24 f. ounces of fluid extract	1,044 grains.
In additional percolate for 1 f. ounce of fluid extract	43·5 grains
In 1 fluid ounce of finished fluid extract	14·35 grains.
In exhaust percolate for 24 f. ounces of fluid extract	174 grains.
In exhaust percolate for 1 f. ounce of fluid extract	7·25 grains.
From 1 troy ounce of India senna	150·75 grains.

The results of the last two experiments correspond practically with Experiments 1 and 2. While the fluid extract, made by

fractional percolation, contains fifteen grains less of solid matter, the officinal preparation contains but one hundred grains of solid matter in the fluidounce not heated; whereas the former contains one hundred and twenty-eight grains. Fractional percolation appears therefore to be well adapted to the preparation of fluid extract of senna, unless we take the ground that that portion of senna, which is subjected to heating, is not injured thereby.

A series of experiments with rhubarb was next undertaken, but unfortunately I was unable to complete them, and had to content myself with the two following:

Experiment 5.—Twenty-four troy ounces of rhubarb, in moderately fine powder, was treated with diluted alcohol by fractional percolation, precisely like the senna in Experiments 1 and 3, with the following results:

Amount of solid extract—

In 24 f. ounces of fluid extract	3,432 grains.
In 1 f. ounce “ “	143 grains.
In exhaust percolate for 24 f. ounces of fluid extract	2,058 grains.
In exhaust percolate for 1 f. ounce of fluid extract	85·75 grains.
From 1 troy ounce of rhubarb	228·75 grains.

Experiment 6.—Twenty-four troy ounces of the same lot of rhubarb, treated according to the Pharmacopœia process, with alcohol, followed by diluted alcohol gave the following results:

Amount of solid extract—

In reserve for 24 f. ounces of fluid extract	3,618 grains.
In “ “ 1 f. ounce “ “	150·75 grains.
In additional percolate for 24 f. ounces of fluid extract	2,364 grains.
In additional percolate for 1 f. ounce of fluid extract	98·50 grains.
In 1 fluid ounce of finished fluid extract	249·25 grains.
In exhaust percolate for 24 f. ounces of fluid extract	84 grains.
In exhaust percolate for 1 f. ounce of fluid extract	3·50 grains.
From one troyounce of rhubarb	252·75 grains.

The results of the last two experiments are exceedingly unfavorable, as regards fractional percolation upon rhubarb, as the reserve portion by the officinal process contained more solid extract than the fluid extract made by fractional percolation contained altogether. That a troy ounce of rhubarb yields more

solid extract by the officinal process than by fractional percolation, is owing to the fact that alcohol is used in the former, previous to the use of diluted alcohol, while in the latter, diluted alcohol alone was used. Had alcohol been used in fractional percolation previous to diluted alcohol, there is scarcely a doubt that the result would have been more favorable to fractional percolation; as the previous percolation with alcohol appears to enable the diluted alcohol to exercise its solvent power more adily.

With but limited experience in the matter, I feel confident that almost all drugs can be exhausted by the process of fractional percolation, "if the proper menstruum is selected; if the drug is properly comminuted; and if the operator possesses the necessary skill." The operator must be competent to judge of the proper fineness of the powder, and whether the same must be packed loose, or compact, or moderately compact. The process does not admit of failure during any of its stages, and requires the utmost care and observance of minutiae and detail, when applied to the preparation of fluid extracts of the present strength. A very limited amount of menstruum must be used, and we, therefore, possess no margin to make up for any neglect or failure during any part of the process. But if we could use powders, as prescribed by the Pharmacopœia, for fluid extracts, and were unable to use for each fraction of powder as large a proportion (or more) of menstruum as is at present directed for these preparations, the process could be made universally applicable, with scarcely a chance for failure in the hands of even the moderately skilled.

This is possible if we reduce the strength of fluid extracts so that eight troyounces of drug shall be represented by one pint, and I see no good reason why this should not be done! We have the precedent in the fluid extract of cinchona and wild cherry bark, both of which are made of the above strength, and are yet sufficiently strong for all practical purposes. And is there any real necessity for the extreme concentration of this class of preparations? With but few exceptions, they are administered in doses of a fluidrachm or less, and those that are given in larger doses could perhaps be so modified by the use of

appropriate menstruæ as to render them equally acceptable in more bulky doses. By adopting this strength a great number of substances could be made available in a concentrated form, which are now excluded on account of the deleterious effects of heat.

On looking over the formulæ for the fluid extracts of our Pharmacopœia it will be observed that in no instance (except perhaps fluid extract of ipecac) more than four fluidounces of percolate is directed to be obtained from one troyounce of drug. Taking this for a basis, I have framed the following general formula :

Take of the drug (in a powder of the requisite fineness,) 16 troyounces ;

Of the menstruum, a sufficiency.

Divide the powder into portions of eight, five and three ounces ; moisten the *first portion* (of eight ounces) with three fluid ounces of the menstruum, pack it carefully in a conical displacer, cover the surface with a disk of filtering paper, and pour on menstruum as required, observing that the surface always remains covered with it. Reserve the percolate, as it passes, in the following fractional portions :

First fraction— 8 fluidounces—Reserve A.

Second “ 6 “ Percolate No. 1 A.

Third “ 14 “ “ 2 A.

Fourth “ 4 “ “ 3 A.

Proceed to moisten the *second portion* (of five ounces) with $2\frac{1}{2}$ fluidounces of *percolate No. 1 A*, pack as above and pour on successively the remainder of *percolate No. 1 A*, followed by *percolates Nos. 2 A and 3 A*, and sufficient additional menstruum to produce the following fractions of percolate :

First fraction— 6 fluidounces—Reserve B.

Second “ 4 “ Percolate No. 1 B.

Third “ 10 “ “ 2 B.

Fourth “ 4 “ “ 3 B.

Then moisten the *third portion* (of three ounces) with $1\frac{1}{2}$ fluidounces of *percolate No. 1 B*, pack as above, and percolate with the *percolates B*, and additional menstruum, in the same succes-

cession as the *second portion* had been percolated *with the percolates A*. Finally obtain—

18 fluidounces of percolate	Reserve C.
-----------------------------	------------

and mix this with the *reserves A and B*, previously obtained.

By this process, from the first eight ounces of drug four fluid ounces of percolate are obtained for each troyounce of drug, while from the second portion of five ounces, nearly five fluid-ounces, and from the third portion of three ounces, six fluid-ounces of percolate are obtained for each troyounce of drug. It will also be observed that the reserved percolates are so divided as to insure the use of the weakest portion of each division last. It is, of course, necessary to pour on each fraction as soon as the one previously added is absorbed, but not before.

Whatever may be the merits of these suggestions in improving the present processes for fluid extracts, the above general process must be decidedly preferable to the present methods for exhausting drugs; although, on the other hand, it is too complicated to find favor with all. Apart from other considerations an economy of menstruum is effected, as under no circumstances more than three to three and one-half pints. of menstruum need be used for sixteen troyounces of drug; for as soon as the first portion is exhausted it may be expressed, and the liquid so obtained used as so much additional menstruum for the second portion; and the same is true of the second portion with relation to the third. Finally all the exhausted material may, according to its alcoholic strength, be mixed with a suitable proportion of water, and expressed; and the liquid so obtained reserved in a suitable vessel until sufficient has accumulated to warrant the expense of distillation.

The practical uses to which these fluid extracts could be applied must be obvious to every one. Many *solid extracts* that are but seldom prescribed could be prepared from them in such quantities as might best suit their consumption. Most *tinctures*, *wines* and *syrups* might be prepared for them by processes, modified according to the nature of the drug or its menstruum. As regards the menstruum appropriate in each case, that must be regulated, not only by its solvent properties, but also by its power of preserving. It would perhaps not be impracticable to

introduce glycerin into the menstrua for some fluid extracts, especially for those that are prepared from astringent drugs.

If by the above remarks I have succeeded in interesting any of the numerous pharmacists of our country, I trust that they will find pleasure in experimenting upon a subject which, although so far mainly theory, I hope soon to be enabled to present in a more practical shape.

LOUISVILLE, *February*, 1869.

—*The Pharmacist*, Chicago, *March*, 1869.

TINCTURA IODINII DECOLORATA.

BY CHAS. O. CURTMAN, M. D.,

Prof. of Chemistry in the Missouri Medical College.

A colorless tincture of iodine for external application to the face, neck and hands, has so many obvious advantages over the common officinal compounds that various efforts have been made to obtain a reliable preparation, which, while it retains the valuable properties of the iodine, does away with its objectionable features. Most prominent among these objections are the unsightly stains inseparable from the use of the common tinctures. Different formulæ have been from time to time made public for accomplishing decoloration; some of them using alkaline sulphites, or hyposulphites, which convert the free iodine into an alkaline iodide, and have no preference over a simple solution of iodide of potassium or sodium. Others effect the discharge of the color by carbolic acid, which certainly gives good results, but may not always be considered a desirable addition; others again convert the free iodine of either the simple or compound tincture into ammonia compounds by the addition of aqua ammoniæ in various proportions, and this seems to me the method deserving preference over the others on account of the greater volatility of the resulting product, and its better adaptation to speedy absorption. The formulæ based upon the action of ammonia, however, differ widely in their proportions of iodine and of ammonia among themselves, and from the corresponding officinal preparations of the U. S. Pharmacopœia, and varying so much in strength they have, perhaps on that account, found less favor than they deserve.

Now, the Tinctura iodinii, U. S. P., contains 30 grains of iodine per ounce, all of it uncombined. The Tinctura Iodinii Composita, U. S. P., contains 38 grains of iodine, (15 grains of free iodine, and 23 grains of iodine combined with potassium). As the iodine in the colorless preparation does not exist in a free state, but in that of ammonia compounds, which acts somewhat less energetically than the free metalloid, the proportions of the compound tincture, 38 grains of iodine per ounce, are probably the best, and this would require about one and one quarter ounces per pint.

To exactly convert this amount of iodine into the colorless iodide of ammonium and iodate of ammonia, 309 minims (about five fluid-drachms) of Aqua Ammoniae fortior U. S. P. (spec. grav. 0.900) per pint, or about 20 minims per ounce are requisite. The published formulæ give considerably more than that, some of them recommending half a pint; some only four fluid-ounces per pint of tincture, but all of them agree in using vastly more than theory requires, and thereby make the preparation objectionable on account of irritating ammonia vapor, which though it may prove very useful in many cases, should certainly not always be present; at least its addition should be left to extemporaneous prescription. On the other hand, the employment of only the theoretical quantity results in decoloration so slowly as to be practically and virtually inapplicable.

Experiments instituted to ascertain the least amount of ammonia by which the tincture could be rendered colorless in a reasonable space of time, gave the following results. Into nine vials the ingredients for the tincture were placed in varying proportions, thus :

	I	II	III	IV	V	VI	VII	VIII	IX
Iodine, grains	38	38	38	38	38	38	38	38	38
Alcohol f5	8	7½	7	6½	6	5½	5	4½	4
Aqua Amm. fort. f3	½	1	1½	2	2½	3	3½	4	

No special precautions were taken in regard to the regulation of light or temperature. The iodine was completely dissolved in the alcohol before the addition of ammonia, which occasioned a copious dark precipitate, re-dissolving in a few hours. No. 1 was simply kept for comparison of color. Even during

the first few hours a slight decoloration appeared in every vial, but was most decided in No. 9, which bleached from day to day, and on the third day retained only a deep straw color, while the others had lost their color in strict proportion to the quantity of ammonia present—No. 2 being yet very dark, though considerably lighter than No. 1.

For complete decoloration, No. 9 required 5 days; No. 8, 8 days; No. 7, 11 days; No. 6, 15 days; No. 5, 21 days; No. 4, 27 days; No. 3, 37 days; No. 2, at the expiration of six weeks, still retained considerable color, being as dark as No. 8 on the second day.

From the above data the following working formula would appear most appropriate for general application:

	For 1 pint.	For 15.
Iodine,	1 $\frac{1}{4}$ oz.	38 grains.
Alcohol,	13 f. oz.	6 $\frac{1}{2}$ f5
Aqua Ammon. fort.	3 f. oz.	1 $\frac{1}{2}$ f5

Dissolve the iodine completely in the alcohol, then add the ammonia. This occasions at first a dark precipitate of iodide of nitrogen, which, however, soon re-dissolves and is entirely decomposed. Set aside for four weeks or until perfectly colorless. Occasional shaking up is advantageous. More ammonia would hasten the process of decoloration, but should be avoided. When pure materials are employed no filtration is necessary.

If, however, the presence of iodide of potassium should be deemed preferable, according to the proportions of the Tinctura Iodinii Composita, U. S. P, the amount of ammonia may be still farther reduced, as over half of the whole amount of iodine present is already in combination with potassium. The following experiment was made to ascertain the best proportions—four vials were filled with:

	No. 1.	No. 2.	No. 3.	No. 4.
Iodine, grains,	15	15	15	15
Iodide potassium, gr.	30	30	30	30
Alcohol, fluid-drachms,	7 $\frac{1}{2}$	7	6 $\frac{1}{2}$	6
Aqua Amm. fort. fluid-drachms,	$\frac{1}{2}$	1	1 $\frac{1}{2}$	2

No. 4, lost color very quickly, and on the fourth day was only of a pale straw color; while No. 1 was yet very dark, though

much lighter than the tincture without ammonia; the intermediate numbers were also intermediate in color. For complete decoloration, No. 4 required 6 days; No. 3, 9 days; No. 2, 27 days; No. 1, 35 days. The proportions of No. 1, therefore, would be least objectionable on account of its small quantity of ammonia, though requiring rather a long time for decoloration.

A modification of this process for a speedy preparation of colorless tincture of iodine without excess of ammonia has suggested itself to me, and upon trial given satisfactory results, though I would only recommend it in cases where the shortness of time forbids the employment of the other. This consists in speedily decolorizing the solution of iodine in alcohol by a surplus of ammonia, and, after decoloration, carefully adding hydrochloric acid until the reaction remains but feebly alkaline. The hydrochloric acid forms with the free ammonia chloride of ammonium, which, being but slightly soluble in alcohol, is nearly all precipitated in the form of a white crystalline powder, while the iodide of ammonium and iodate of ammonia remain in solution. An addition of even a slight excess of acid would destroy the preparation, restoring the color of the tincture, by decomposing the ammonia compounds of iodine; the precipitate can be readily removed by filtration. Very strong alcohol should be employed in this process, as the completeness of the precipitation of chloride of ammonium is in direct proportion to the strength of the alcohol. As some of the chloride of ammonium, however, remains in all cases, and more material is required to accomplish the same object, I should give the simpler process of slow decoloration by addition of a minimum of ammonia the preference.—*St. Louis Medical Reporter*, June 1st, 1869.

A NEW BELLADONNA PLASTER.

To the Editor of the Pharmaceutical Journal:

GENTLEMEN,—Your correspondent, Mr. Gissing, in the last number, asks for certain information relative to the extract of belladonna now in use for making the emplastrum belladonnæ of the British Pharmacopœia, which I am not able to give; but, as belladonna plaster has for some time occupied my attention,

it may, perhaps, interest Mr. Gissing, or other of your readers, to know how much better a plaster can be produced by the use of resinous extract of belladonna root than that made with the spirituous extract of the leaf.

Instead of the dark, nasty preparation of the Pharmacopœia, I obtain a beautiful plaster, somewhat resembling empl. cerat. sapon., which adheres very nicely, requiring no adhesive margin, neither does it run nor exude, so that it may be worn a month or longer without staining the linen or producing any discomfort whatever.

When this plaster is made with a third of its weight of pure extract, it is remarkably soothing, and, judging by my own experience, I think it promotes quiet and refreshing sleep.

I am not aware that the extract of the root has ever been used in this way before, but I think it must commend itself to every pharmacist, as, besides being cleaner, the root is always more to be relied on for medicinal activity than any other part of the plant.*

I am, gentlemen, yours respectfully,

JOHN BALMER.

205 St. John Street Road, London, E. C., April 20, 1869.

—*London Pharm. Journ.*, May, 1869.

CARBOLIC ACID PLASTER.

BY JOSEPH HIRSH.

Surgery has so far employed carbolic acid in three shapes, viz. : that of carbolic oil, being a mixture with linseed oil ; of carbolic lotion, which is a dilute solution in water ; and that of carbolic paste, which is formed by its mixture with chalk.

The preëminent position, in which the success with this drug has placed it, in surgery, prompts me to suggest its use in a more portable form, which, with the virtues of the above prepa-

* A process analogous to this has been in use for some time past in Philadelphia, and the Pharmacopœia Committee of the Philadelphia College of Pharmacy have adopted the extract of the root of belladonna as the basis of belladonna plaster in their revision.—EDITOR A. J. PHARM.

rations, would avoid some of the objections inherent to those referred to, prominent among which I might mention their odor.

For this purpose I would suggest the carbolate of glycerin, which, with isinglass, forms an even, homogenous mixture, capable of being spread on cloth or paper in the same manner in which ordinary courtplaster is prepared, while it is easily miscible with any of the odorous principles with which nature abounds, and which suffice to mask the inherent odor of the acid. The presence of glycerin prevents the complete drying of the isinglass, and preserves it in that elastic, india-rubber like state, which prevents the escape of any carbolic acid.

If, as in courtplaster, the tissue is coated twice, the top layer will certainly preserve the carbolic acid of the lower stratum as securely as a well-stopped bottle would, so that the plaster is not likely to suffer a diminution of its good qualities by age.

But as both coats are extremely thin, the moistening of the plaster on its application, conjointly with the elevated temperature of the skin applied to, removes at once every impediment to the absorption of the carbolic acid by the cuticle beneath it.

The presence of carbolic acid would not preclude the use of arnica in such a plaster, if desirable, although the modern taste for simplifying the existing combinations of remedial agents would hardly recommend such a mixture, the efficacy of which would depend upon the presence of carbolic acid.

This rebuke of unnecessary complication cannot be urged against the presence of glycerin, as this substance aids greatly in producing a homogeneous mixture of the acid, isinglass and oil, used for the concealment of the odor of the acid, while it also produces and preserves the elasticity of the plaster.

The side of the tissue not coated with the carbolate may, like that of courtplaster, be rendered waterproof, for which purpose a solution of india-rubber, paraffine or of collodion would be most suitable.

Upon being rendered waterproof, paper, as suggested above, may in many cases be substituted for silk or other tissue, as the waterproof coating on one side, as also the two of isinglass on the other add to it considerable cohesive strength.—*The Pharmacist, Chicago, March, 1869.*

A NEW MODE FOR THE PREPARATION OF SULPHATE OF MANGANESE.

By F. MAHLA.

The methods for the preparation of Sulphate of Manganese as suggested in the various hand-books of chemistry do not only give unsatisfactory results—they are also difficult and exceedingly unpleasant to execute. It seems to me, therefore, that a new mode for the manufacture of this salt would be acceptable to the profession.

I use as material for the preparation of Sulphate of Manganese the liquid which remains in the retorts after a chlorine generation. To this I add carbonate of soda in a sufficient quantity to throw down all metallic oxides, or until it has acquired a slight alkaline reaction. The precipitate thus produced is collected on a muslin filter and washed with pure water until the filtrate does not produce any more a marked reaction with nitrate of silver.

Three-fourths of the moist magma are now placed into a porcelain evaporating dish, and dilute sulphuric acid added in sufficient quantity to effect a complete solution. This is heated to near the boiling point, and the reserved one-fourth of the precipitate added in small portions at a time, until the liquid after filtration is not blackened any more by the addition of tannin. The entire bulk of solution is then passed through a filter and the filtrate with wash waters evaporated to crystallization, which does not take place till the liquid has acquired almost a syrupy consistency. The first crop of crystals is sometimes contaminated with sulphate of lime, owing to the presence of carbonate of lime in the commercial peroxyd of manganese. It is easy to separate this compound by evaporating the liquid to dryness, when, on redissolving the dry residue in a small quantity of water, the sulphate of lime, owing to its lesser solubility, remains as an insoluble body, from which the solution of Sulphate of Manganese can be separated by filtration.—*Pharmacist, March, 1869.*

Chicago, February 16, 1869.

A POISON FOR RATS.

According to the French 'Moniteur' there are in France upwards of two thousand millions of rats and other rodents. Supposing each of these little quadrupeds to commit the damage of only one centime per annum, this loss would amount in the aggregate to twenty millions of francs annually. Hence it is most desirable to find some means of destroying this vermin in large numbers as expeditiously as possible. Nux-vomica, arsenic, phosphorus, and traps have been successively tried, but with no very decided success, and certainly not equal to the rate of increase of these prolific creatures. Recent experiments, however, show that squills (*Scilla maritima*), the bulb of which is much used in medicine, is not only a powerful poison for rodents, but also one they are very fond of. The way of preparing it for the desired purpose is as follows:—One of the bulbs is cut into slices, hashed and bruised, then done in the pan with fat, which is afterwards strained through a cloth and poured into broken plates and saucers to be placed in the cellars and other places infested with rats, mice, etc. To prevent dogs and poultry from eating of this poisonous compound in stables, pigeon-houses, or farmyards, it may be put into a wooden box, about a foot and a half long, and having a hole at each end. The rat gets in at one end and goes out at the other, after partaking of the noxious food, which soon kills it. Squills may also be reduced to powder for the same purpose by bruising them in a mortar to a pulp, which is afterwards incorporated with as much flour as it will hold. This paste is then rolled out, as they do for a pudding, then cut into shreds, which are left to dry on hurdles or on sheets of pasteboard, and are afterwards pounded in a mortar. The powder thus obtained will keep for years, and may be put into boxes or barrels. If manufactured on a large scale, it may become a profitable article of exportation. In Algeria squills cost nothing, the country being absolutely overrun with them.—*Lond. Pharm. Journ.*, Nov., 1868, from *Times*.

NOTE ON THE SO-CALLED CARBOLIC ACID, OR COAL TAR CREASOTE.

BY EDWARD R. SQUIBB, M. D.

(Continued from page 270.)

Neither color, consistence, nor odor, however, can be relied upon as any useful indication of real value, but it happens that there is one very simple and very easy test of value which is infallible. All the useful tar phenols are entirely soluble in water, while the useless substances with which they are naturally associated are not,—at least to any practical extent. But as some of the phenols require a large proportion of water to dissolve them the water in testing them should always be taken in excess. A fluidounce of the creasote well shaken with one gallon of water, and the whole passed through a small filter of two or three thicknesses of good filtering paper well wetted in the funnel at the time of using, will decide its quality at once, and the proportion of insoluble oily matters which do not pass through the filter may be roughly estimated when in sufficient quantity, by breaking the point of the filter over a graduate measure. The creasote, when of good quality, should contain from 90 to 96 per cent. soluble in this proportion of water, and then the residue which will not pass the wet filter is too small to be roughly measured, though very easily seen, estimated, and compared with residues from other samples. Much of the impure carbolic acid, or the badly named “solution of carbolic acid,” contains less than 90 per cent. of soluble phenols, while the so-called crude carbolic acid of the market varies very much, samples being met with of all values, from 10 or 15 per cent. up to 50 or 60 per cent. These are all proportionately useful for disinfectant purposes, and, when properly managed, for medical uses also, as far as they go. But they are greasy, tarry, dirty mixtures, difficult of management by ordinary means, and should therefore generally be rejected for common uses, and always when for medical uses. In applying the test of solubility to the creasote to determine its value, it must be remembered that in the interest of profit or gain, fraud may be practiced, but for the present it is generally sufficient to see that the creasote to be tested is neither acid nor

alkaline to either wet or dry test papers, and that it does not smell very strongly of sulphuretted hydrogen.

When applied to the skin of full strength it turns it white, and shrivels it somewhat, producing a smarting, tingling numbness, which is diminished by holding the part low, but increased by holding it high. It is easily washed off, but leaves a mark of red irritation, which on delicate surfaces produces desquamation even from momentary contact. The free application of sweet oil tends to allay this irritation and allay the smarting. When swallowed in quantity it is an irritant poison, and very rapid in its action. As it readily mixes in all proportions with all oils and glycerin, the very first thing to be done in any case of poisoning by it is to administer any oil that is nearest at hand, but the more bland the better, and this in large quantity proportionate to the quantity swallowed. If no other oil be near by, lard or butter are better than kerosene, but the latter should be used rather than wait even a short time for a better. As soon as practicable after the oil, an emetic, consisting of a large teaspoonful, or two teaspoonfuls each of mustard and common salt, stirred quickly into about half a pint of lukewarm water, should be given, and its operation, if not prompt, should be facilitated by draughts of lukewarm water. It is not a virulent poison in any reasonable or probable quantity, and a thorough evacuation of the stomach will commonly ensure safety.

The uses of the creasote, undiluted and undissolved, are as yet few, and are altogether sanitary or hygienic,—never medical, and rarely as a disinfectant for medical uses. Smearred over surfaces which are out of the way of ordinary contact, and where it is not liable to be rapidly washed away by drainage or sewage, its application lasts much longer than that of any solution, and is therefore better for places not easily accessible. But it is scarcely doubtful that the same quantity applied repeatedly at intervals in solution, would produce double the useful effect. Undiluted it may be applied to the sides and ceilings of cellars, water closets, stables and out-houses, and to the mouths and throats of drains, sewers, garbage receptacles, etc., and to close alley-ways and passages. But for many of these uses it is best applied diluted with some non-drying oil, as whale oil, or other

cheap animal or fish oil, or petroleum, or tar oils, but not with drying oils, such as linseed oil. When mixed with any cheap oil in proportions varying, to suit the purposes, between 10 and 25 per cent. of the good creasote, it is applicable to more numerous uses. Smearcd upon wood-work or other absorbent surfaces, or even upon the coats of animals, it is much more lasting, as well as stronger in effect than the solutions, and saves much time and labor where it is important to economize these.* This is the form in which it is best applied to the live-stock cars and pens of railroads, and it is also a collateral advantage of this form of applying it that the oil so fixes it and holds it upon rough absorbent surfaces, that the filth which lodges and accumulates upon the surfaces to which it has been applied will be disinfected by it, and may be washed off two or three times with water, and the surfaces still retain effective quantities of the oily mixture. Wood or plastered walls can be so saturated with such mixtures as to last for a long time, but the effective influence of the agent is given off much more slowly, and is more feeble than when, in the case of watery solutions, the vapor of the vehicle passes off and carries the agent along with it into the air. This affords the plain indication for a rule that where surfaces and solid substances are to be disinfected through constant use, and through rains and ablutions, oily mixtures are best. Where the air is to be disinfected or charged with the creasote, and where frequent aspersions can be conveniently used, watery solutions are best.

Any inert powder which may serve as a vehicle can be used for mixing and holding this liquid for disinfectant uses. Half slaked lime perhaps forms the best powder in which to mix it, and a proportion of 10 to 20 per cent. is a good one. These mixtures are often called carbolate of lime. Saw-dust or sand make excellent vehicles for it; and sand, moistened with the creasote and swept over the floors of hospital wards once or twice a day, is a very efficient way of using it.

* A friend of the writer, Mr. Ferris Bringham, of Wilmington, Del., mentions that such a mixture smeared upon the shaggy coat of a dog to dislodge fleas is so remarkably permanent that after an interval of many months the odor of the phenols becomes distinct every time the dog gets wet. This also illustrates the power of watery vapor for carrying these substances into the atmosphere.

Two solutions of this creasote may be usefully recognized and established as sufficient for all its general uses, whether sanitary or medicinal. One may be called a saturated solution, and the other a standard solution, such having been used under these names to some extent in the army and in some large hospitals and found convenient, during some years past.

The saturated solution is made by shaking five measures of the creasote with one hundred measures of water, and filtering the solution off through two or three thicknesses of wet paper. It is not necessary that the water should be warm, indeed it is better used at ordinary temperatures, because the filtrate, which is apt to become turbid or milky at best, becomes much more so in proportion as it is cooled down below the temperature at which it was filtered. This milkiness, though unsightly, is of no practical importance, and may be disregarded in most of the uses to which the solution is applicable. When applied to nicer uses it may be filtered a second time, after standing. If the creasote be not very thoroughly purified the solutions, on exposure to light, become of a pinkish or reddish tinge, which renders them inelegant, to say the least. The saturated solution will contain from 2 to 5 per cent. of the creasote in proportion as the latter consists mainly of the one Phenol or the other. As the creasote commonly occurs, it will contain about 4 per cent., while if made from the crystallized Phenol or crystallized carbolic acid, it will contain 5 per cent., and will not be strictly a saturated solution, since water at summer temperatures takes up about 6.6 per cent. of the crystals, and makes a perfectly clear and colorless solution even without filtration. At low temperatures, however, these solutions become milky if holding more than 5 per cent. Hence 5 per cent. was fixed upon as the maximum strength for what is called saturated solution. In the management of the crystallized Phenol (carbolic acid) for dispensing, it is perhaps the best practice, on buying a pound bottle of it, to melt it by setting it in water at about 37° C. or 100° F., and then add water in the proportion of one fluidounce to the avoirdupois pound. It will then remain permanently liquid except at very low temperatures, and should be dispensed by measure, being still used as

"crystallized carbolic acid." When a bottle of it has been treated in this way, the person who adds the water should indicate it by passing a pen mark through the word "crystallized" on the label, or by some other significant mark on the label. It is a curious circumstance in connection with the use of this crystallized Phenol that when thoroughly melted it will often remain liquid for days and weeks, and no agitation or moving the stopper, or other ordinary means, will cause it to recrystallize. But sooner or later a time will come when, even without change of temperature, it will be found solid. The writer has seen this crystallization commence in a pound bottle which had been liquid for many days, and be completed within a few seconds. The dropping into the liquid a particle of the crystals from another bottle will determine the crystallization at once. Cooling down by ice water will also cause it to crystallize, but it must be cooled far below its melting point.

The saturated solution is useful for many surgical and medical purposes, but chiefly as a disinfectant for pouring upon infected clothing and washing infected furniture and utensils in time of epidemic or contagious disease, etc. If the circumstance developed in the experiments with dilute solutions be accepted,* namely, that the creasote is itself destroyed or used up in proportion to what it accomplishes, it will serve as a key to its use in more or less concentrated form. It is often if not commonly used in great excess, and up to this time no one appears to know how little will serve the purposes to which it has been successfully applied.

The standard solution is a one per cent. solution, and is made by agitating one measure of either the crystallized or the liquid creasote with one hundred measures of water, and filtering through two or three thicknesses of wet paper when necessary.

* Reference is here made to some collateral observations in the experiments with very dilute solutions which were not investigated, much less proved. And as the indications are in opposition to the generally received opinion they cannot be trusted. The bare circumstance is that dilute solutions made with water containing organic matters, appeared to give less taste and smell than when made with distilled water, and appeared to lose a part of their taste and smell on standing but a short time.

It is almost identical with the officinal "Aqua Creasoti," which is directed to be in the proportion of one fluidrachm to the pint of distilled water, or one to one hundred and twenty-eight, and the two may be used indiscriminately for most purposes. This appears to be the solution best adapted to the largest class of common uses of this substance, and perhaps it would not be too much to say that it subserves all but the exceptional uses. Its chief and great recommendation is that it may be profusely and even carelessly used with good average effects, without risk or danger of any kind, and without being very disagreeable to most persons, even when first used. A pint of the creasote to twelve gallons of water, or three or four pints to the barrel, makes a sufficiently definite solution for profuse general use, and those hospitals and asylums which have adopted it in this rather rude though practical way, have generally been well satisfied with the results obtained. For medical purposes, external or internal, it should be made with more accuracy, and for nicer uses should be filtered, but this filtration is addressed to the eye, rather than to any important good actually obtained by it, unless the creasote be of poor quality. With the cheaper liquids, and even with some of the dearer ones sold prior to the present time the solutions had either to be filtered, or be allowed to stand until the light oils rose to the surface and the heavy ones fell to the bottom, but much of that now produced affords good solutions, which for most disinfectant uses do not require filtration.

The method of making this solution upon the most economical scale, recommended about two years ago for army and other hospital uses, and adopted with success in some instances heard from, is to take an ordinary tight barrel to stand on one end, upon a box or other elevation in some convenient place, fitted with a common faucet placed an inch or two above the lower hoops, and having a hole bored in the head that stands uppermost, and the bung permanently secured in place. Half fill the barrel with cold water, and add to this about three pints or three pounds of the creasote, (impure carbolic acid). Turn the barrel down upon its bilge with the faucet uppermost, and the hole in the upper end corked, and agitate it backward and forward very thoroughly. Then set it up, and fill it nearly full of water

at ordinary temperatures, cork the opening, and again turn it down and agitate it well. It is then ready to be placed upon its stand, and after standing a few hours is ready for use, at a cost of not more than 20c. per gallon. In times of epidemic diseases, or any large and frequent demand, this plan is recommended to pharmacists, who might sell the solution by the pint or gallon, at say 6c. per pint, or 40c. per gallon.

The uses and applications of this solution are so numerous that it is impossible to allude here to more than a few of the prominent ones. When it is remembered that this substance in very small quantities (how small no one yet knows,) is azymotic—that is, opposed to or fatal to all the lower orders of both animal and vegetable life; and is antiseptic—that is, opposed to putrefaction or decay, preserving even the organisms which it kills. And when it is remembered that all contagious, infectious and epidemic diseases are believed by good authorities, to be zymotic—that is, of the character of a fermentation dependent upon living organisms; and that all the processes of putrefaction and decay are zymotic also—that is, dependent upon fermentations of the kind which are caused and kept up through the agency of cell-life, or organisms of low vitality, a good key to its powers and uses is at once obtained, and at the same time a good guard against its misapplication is established. Thus it will be seen at once that it is not a disinfectant at all, in the sense of deodorizing, except in its effects upon the causes which produce some odors; and its whole reputation as a deodorizing disinfectant is unsound and fallacious. Applied to the causes and sources of most of the hurtful odors which are not purely chemical or inorganic, it at once arrests the processes which give rise to them, and thus it cuts off the supply of these emanations. But the odors already formed, as such, are probably not at all influenced by it, except in being masked and covered up by its own overwhelming odor. All odors, to a great extent at least, follow the laws of diffusion of gases, and the sources of supply once cut off, these laws of diffusion so quickly dilute and disarm these mere results or effects, that they become practically insignificant; and it is a matter of but little moment as to exactly how the result is attained, or to what agency the credit belongs,

if it was not for the undisputed fact that accurate knowledge is the essential element of the greatest success in all things. The hurtful material in all foul emanations and foul air is probably inodorous and insensible, but is endowed with vitality, and the laws of nature tend to direct this embryonic material to a soil and climate fitted for its functions of germination and reproduction. When the material fails to come under these favorable conditions it either dies, or lies dormant until the vicissitudes of nature become favorable to its development. But here the opposing influences working under the same laws come to exert their powers, and the same laws which distribute and disseminate these germs of fermentation are as ready and effective in distributing the antidote or azymotic. Hence, as an illustration, cattle acclimated to a given zymotic disease, through which they have more or less perfectly passed, disseminate the cause or seed of this disease by means of their excretions. The germs fall with the excretions upon the soil of the roads and fields over which these cattle pass, and may or may not there find the conditions necessary to their germination and growth. The excretions dry up to dust, and the winds scatter this dust and these germs over the pastures and through the atmosphere, and they are thus present in sufficient quantity, when other cattle not acclimated nor protected against the influences come within the infected locality. Carried into the lungs and stomachs of such, with the air and food, they meet with the conditions necessary to their growth and reproduction. Now if the azymotic could be distributed in the same way, there would soon be an end of zymotic diseases, but with it an end of all fermentation, and an end of the present order of creation, in which fermentation performs an indispensable part.

By following out some such abstract of the present state of knowledge, gleaned from the various authorities, the safest, best and most permanent indications to direct the uses, and prevent the abuses and misapplications of such a substance, may be easily obtained; and it remains only for the writer to mention some special uses which might not be reached through reasoning or which have been most prominently successful in practice.

In the treatment of burns and scalds this is the best applica-

tion known at the present day; and so far as the intense pain and its depressing effects, during the early stages of these accidents, is concerned, it leaves little to be desired. This standard solution, or the officinal solution of creasote, applied of a strength varying somewhat with the degree of the injury and the character of the surface burned, by means of light cloths frequently wetted, very promptly relieves the pain. Upon delicate, sensitive surfaces the solution should be diluted with an equal volume of water; but upon ordinary and exposed surfaces it may be used with little or no dilution. It is a perfectly local anæsthetic, and whenever the pain and its causes are perfectly local, and partake of this character belonging to burns, it may be used with prompt good effect.

In erysipelatous inflammations, and under other circumstances of exalted sensibility, care is needed not to use solutions too strong, since such produce pain of the same character as that sought to be relieved. There is a very curious point in the relations of this substance to pain which the writer has never seen noticed, and which is worthy of note and investigation. If a part of the hand or foot be burned and painful, the pain is much relieved by putting the part in an elevated position, as is well known. If to a burnt surface the solution of creasote be applied too strong, the pain appears to be but imperfectly relieved, and if the part be then elevated the pain and tingling is much increased. This is the bare fact, confirmed by repeated observations, and when taken in connection with the circumstance previously mentioned, that the burning and irritation caused by the application of the strong creasote to the skin is increased by holding the part in an elevated position, it seems to indicate that the pain of burns, and of erysipelas, etc., may be supplanted and replaced by the pain of the creasote, when this is applied too strong or too freely; and that the test is, that while the original pain is relieved by draining the blood out of the part, the superinduced pain, or the pain of irritation from excessive use of the creasote, is aggravated by this procedure.

Another prominent use of great importance is its power to prevent and arrest suppuration or the formation of pus. Many of the recently published results of its use for this purpose are

wonderful, in many respects; and not the least wonderful of these results is the apparent impunity with which so powerful and so caustic a substance as the crystallized Phenol has been introduced between the flaps in surgical operations, and within the wounds and injuries in compound fractures, etc. This inconsiderate and heroic practice cannot, however, be needed or justified in order to obtain the best results of the agent; and he must be a bold man who originated the practice, unless he reached the results by the failure of more dilute applications.* All suppurating surfaces, whether of pyogenic membrane or of altered mucous membrane, appear to be benefitted by the application; but it is often a very nice point to determine the strength, or rather the dilution, best adapted to the object in view. For gargles, washes, injections, &c., used in relation to inflammations, suppurations, etc., the standard solution is, in a large majority of cases, much too strong, even when the weaker crystallized Phenol is used. Under this division of its uses may be classed its applications in diphtheria, croup, aphthous diseases, chronic cystitis, leucorrhœa, ulceration of the rectum, fistula, abscess, carbuncle, etc. From some observations yet incomplete and unpublished, it appears to be very effective in the treatment of gonorrhœa and primary chancre, an effect well understood if the zymotic character of these diseases be proved. In all herpetic and impetigenous diseases of the skin it is very effective. The writer has seen half a ring-worm, herpes circinatus, cured by it, whilst the other half, to which it was not applied, remained. Dilute solutions used as mouth washes soon wear out the at first unpleasant taste and odor, and when habitually used, as in the

* Since this paper was written Professor Lister, of the University of Glasgow, to whom this criticism refers, has used a watery solution, which he says has in no instance failed, and which being a less powerful irritant does not produce sloughing from caustic action, nor produce obstinate vomiting for twenty-four hours after its application, as the crystallized acid sometimes did. Professor Lister's papers "On the Antiseptic System of Treatment in Surgery" show how easy it is to overdo a good work, and to almost hopelessly complicate a simple expedient in surgery by cumbrous and hurtful directions and details. That an earnest, honest worker may sometimes do this is within the experience of the writer of this note.

daily brushing of the teeth, they prevent the accumulation of tartar, which is a parasitic growth, and keep the mouth and teeth clean and healthy. This habitual use corrects and prevents factor of the breath from decayed teeth, and when taken internally corrects and prevents that which proceeds from the stomach. The internal uses of the creasote are, as yet, not well studied; they are, however, numerous and important, and present a large field for investigation, particularly in their relations to the exanthemata, and indeed to all zymotic diseases. Recently published accounts of its use, both externally and internally, in scarlatina are favorable.

From a sanitary or hygienic point of view its uses and applications are more general than those of any other article, or perhaps even than all the other agents taken together. Indeed it is of almost universal applicability, but with the single important disadvantage of its disagreeable odor. This odor is, however, less disagreeable as the oils and tars are more perfectly separated, and in the best crystallized Phenol are not very objectionable to persons in general. Even when very disagreeable at first, it becomes less so, and, in a great majority of instances, soon ceases to be disagreeable at all. All the evidence that can be collected goes to show that the odor and vapor are wholesome and never hurtful, even by prolonged exposure to a saturated atmosphere. It is stated to be a tonic to those who work in it, and to have a general tendency to robust health. Its antiseptic or preservative powers have been long known, though but recently investigated, and it is now believed, on good authority, that the process of embalming used by the ancient Egyptians, whereby their mummies are handed down through thousands of years, owes its efficacy and success mainly to this substance and its homologues. Many generations of our own time have protected and preserved their meats and fish through its agency as derived from smoke, and all the preservative agency of smoke, tar, soot, etc., is derived from this group of substances. Small animals, insects, etc., killed by it dry up in the air without putrefaction, and it has been said by a French writer that 15 grammes of it would preserve an adult human body for sixty days after death. For use about the dead it is probably destined ultimately

to take the place of ice, and of all modes of embalming. It is said that a dead body enveloped in cloths, kept moistened with dilute solutions, may be kept well preserved and in a natural condition, without hurtful emanations, for any reasonable length of time, and that its free use after death from contagious or infectious diseases, destroys the influence of the diseases. When bodies are to be preserved for some time the solution should be injected into all the natural openings, and may be introduced into the abdomen and thorax, and even into the cranium, by means of a trocar and canula without mutilation. Careful injection of the blood vessels is, however, the most sure and effectual process for preservation.

In all cases of infectious, contagious and epidemic diseases the standard solution, either entire or not diluted more than its volume, should be freely used upon the bedding, clothing and utensils of the sick many times each day, by sprinkling, sponging, etc.; and the exposed parts of the body, and those soiled by dejections, may be frequently sponged off with great advantage. All bedding, clothing, etc., removed from the sick and dying, should be at once well moistened with the solution and be then immersed in water; after being washed and ironed it should be lightly sprinkled with the solution. A portion of the solution should be put into close stools, urinals, etc., immediately after these have been cleansed, to remain there and receive the next dejections. The disinfectant thus gets immediate action upon the infected matters, and they go together into the sewers under the best sanitary conditions. Walls, ceilings, carpets, floors and furniture of infected rooms should be occasionally sprinkled with the solution. This may be conveniently done by dipping the end of a common dust brush into the solution poured out into a soup plate, and then throwing the solution off the brush in a kind of shower upon the walls, ceilings, etc.

It is not only in contagious and infectious diseases that the solution is useful, but wherever deficient ventilation, or want of cleanliness, or offensive discharges corrupt the atmosphere of apartments used either by the sick or well. Its free use is fatal to all the small vermin which infest and prey upon the bodies of

the diseased or healthy, and even tends to diminish the annoyance from flies and mosquitoes.

Much of the above information is gleaned from the current Journals, foreign and domestic, and as the authorities are too numerous to be quoted, the statements are guarded by a caution which becomes necessary to avoid over-advertising a novelty which is in some risk of becoming fashionable.

Since commencing this note the writer has received from Messrs. F. Crace Calvert & Co. a series of samples of their products, which he takes occasion to exhibit to the Association in connection herewith. Their "crystallized carbolic acid No. 1," is a very beautiful product, hitherto rarely seen among us. It is very dry and white, showing no signs of discoloration by light for some time, but ultimately becoming of a dusky pink color. The No. 2, medicinal acid, shows but little liquid, even at this summer temperature, but is not so nice as the No. 1. The No. 3 is a still lower grade, and contains much liquid. Quantities of this grade, imported by the Chief Medical Purveyor of the army a year or two ago, and put up by the writer, was almost entirely liquid, even at low summer temperatures.

The liquid specimens, Nos. 4 and 5, have not been examined for want of time, but it is supposed that the No. 5 is practically better than any. The grade No. 3 is that adopted for the use of the British army and navy, because it well subserves all the uses, medical as well as disinfectant. In connection with these is shown a specimen of the creasote put up for the use of our army during the past two years, under the name of impure carbolic acid, by the writer. It contains about 90 per cent. of the tar phenols and has proved a most efficient article in use. This is made by the coal-tar distillers around New York, but at a much higher cost than the preparation from abroad which resembles it in appearance. A specimen is also shown of the standard solution put up unfiltered, in quart bottles, with directions for use. This was put up as cheaply as possible for the Metropolitan Board of Health, and, although unsightly and unpretending, it is really an efficient and useful disinfectant, capable of subserving almost all the general uses of the creasote.

Brooklyn, April 16th, 1869.

POISONOUS DYES.

Judging by some facts which have recently come to our knowledge, the poisonous effects of certain dyes, applied externally or swallowed, will soon attract a considerable share of public attention. We allude more particularly to the dyes of the aniline series, respecting two of which, known abroad as *coralline rouge* and *coralline jaune*, Tardieu, professor of legal medicine at Paris, made a very important communication to the Academy of Sciences on the 1st inst., of which the following is an abstract:—In the month of May, 1868, Tardieu was consulted by a young man, twenty-three years of age, quite healthy and free from herpetic rash, who had been attacked in both feet with a very acute and very painful vesicular eruption exactly limited to the part of the foot covered by the shoe, and tracing on the skin the perfectly regular form of the “pump” which he wore. The skin was violently inflamed, swollen, of a uniform red color, covered with innumerable small vesicles, uniting to form large bullæ filled with a sero-purulent liquid. The eruption was attended by general *malaise*, fever, headache and pain over the heart. The seat and form of the eruption led Tardieu at once to the conclusion that its cause was entirely local; and he did not hesitate to trace it to what the young man was wearing on his foot. He had only a few days previously taken into wear some socks of red silk of a very elegant and fashionable color.

Some time after this, a young man, a friend of his, was affected precisely in the same way from the same cause. Later still, in the month of September, the papers published a letter, in which M. Bidard, professor of chemistry at Rouen, described a similar observation which he had made on a pair of socks sent to him by an Englishman, and which presented, on a lilac ground, circular lines in silk of a bright red tint. The inflammation of the skin of the feet was limited to the parts in contact with the red lines. The lilac color was given by the violet of aniline, the red by coralline. Lastly, it is but a few days since the Paris journals gave the case of an American lady, who, having worn stockings of red silk, found her legs covered with blisters, some

of which had ulcerated; and she suffered from giddiness and severe pains.

Tardieu, assisted by M. Roussin, submitted the socks worn by the first patient seen by him to a careful examination. They were treated by boiling alcohol, in which the red coloring matter quickly dissolved. This alcoholic solution, evaporated to dryness, yielded an extract of which the poisonous properties were proved by the experiments now to be described.

The dry coloring matter, redissolved in a small quantity of alcohol, was injected under the skin of the thigh of a dog, a rabbit, and a frog. The three animals died; the frog the same day, after four hours; the dog the next day, after having survived thirty-six hours; the rabbit not till the day following. The dog and the rabbit had excessive and incessant evacuations. The experimenters then determined to try the coralline itself. In order to obtain it, they applied to M. Persoz, jun., who discovered it in the year 1860, and who placed at their disposal three specimens: the first a pure coralline, the second the red coralline of commerce, the third the yellow coralline. The coralline, or *péonine*, is obtained from rosolic acid, which is itself a derivative by oxidation from phenic acid. It is formed in a close vessel, heated to 150 degrees, by the contact of rosolic acid and ammonia. The result is a solid matter, in plates, of a poppy-red color, green, or dull yellow, by reflected light, nearly insoluble in water, soluble in alcohol and oils, and which has all the characters of an amidic acid.

A quantity of the alcoholic solution containing $2\frac{1}{3}$ grains of solid coralline was injected under the skin of a dog of medium size. The next day, and the day after, it was dispirited and depressed, suffered from well-marked intestinal derangements and loss of appetite, and the thigh near the seat of the injection had become painful. The animal showed signs of suffering, and walked lame. The fourth day a quantity equivalent to 3 grains of coralline was injected. The symptoms reappeared almost immediately, the alvine evacuations returned, the weakness continued to increase, the fever grew more and more intense, and the pain in the thigh became more acute. The animal trembled and could not support itself, its eye grew dim, and it died the

third day after the second injection. A rabbit, after a single injection containing $1\frac{1}{2}$ grains of pure coralline, died in four hours with the same symptoms. Less than $\frac{3}{4}$ of a grain of the coloring matter killed a frog still more quickly.

The examination of the viscera of the animals so poisoned was full of interest. At the point where the coralline had passed under the skin, there was acute inflammation of the cellular tissue, with purulent infiltration. The stomach was healthy, but the intestines, enormously distended with fluid, bore distinct traces of acute inflammation of the mucous membrane. The liver had undergone fatty degeneration. Lastly (and this is the essential character of the poisoning), the lungs in the dog, and still more in the rabbit, appeared as if themselves stained by the coloring matter, and presented throughout a very beautiful scarlet tint, which spread uniformly over their surface, so as to efface the lobular divisions and the vessels ramifying upon them.

M. Roussin, by an ingenious process, succeeding in dyeing red a skein of silk with the coloring matter taken from the liver and lungs of the poisoned animals. In this way the coralline, which had been the cause of the poisoning, was detected by the characteristic property of the coloring matter, just as atropine and digitaline are identified by the power they respectfully possess of dilating the pupil, and arresting the heart's beat. It was a new application, as happy as unexpected, of the physiological and experimental method now so largely used in the detection of organic poisons.

Coralline, then, is doubtless a very energetic poison. When introduced into the living body, even in a small dose, it may cause death. It belongs to a class of bodies which is every day increasing with the incessant progress of the chemical arts; and it affords a new example of the importance, both for hygiene and legal medicine, of following the march and progress of industry, and of studying the influence which its recent conquests may exercise on the health of human beings.—*Lond. Pharm. Journ.*, March, 1869, from *Les Mondes*, par M. l'Abbé Moigno, 4 *Février* 1869.

DETECTION OF PICROTOXIN IN BEER.

Köhler's method for the detection of picrotoxin, the active and poisonous principle of *cocculus indicus*, is based upon the fact, that when ammonia is present, acetate of lead precipitates as insoluble matter from beer, such substances as dextrin, gum, glucose, while the picrotoxin, which is not thus precipitable, can be removed by means of ether from an acidified fluid. The beer to be tested is first mixed with ammonia until it is distinctly alkaline, the ensuing precipitate of phosphates is allowed to settle, and after the fluid has become clear, a boiling hot and concentrated solution of acetate of lead is cautiously added as long as a precipitate ensues; excess of lead solution should be avoided. The precipitate so obtained should be collected on a filter and washed with hot alcohol for a short time; from the filtrate, the lead is removed by means of sulphuretted hydrogen gas, the sulphide of lead removed by filtration, and the filtrate evaporated on a water-bath to the consistence of a syrup; the fluid obtained is treated with ether, the latter separated from the aqueous residue, and the ether removed by evaporation. Picrotoxin reduces the oxide of copper to protoxide, is soluble in sulphuric acid, exhibiting a saffron yellow colored fluid. When bichromate of potash is added to the sulphuric acid solution, a violet coloration ensues, which ends by becoming bright green. If the beer contains strychnia simultaneously with picrotoxin, or extract of *cocculus indicus*, the strychnia remains behind in the syrupy fluid which remains after the ether is separated therefrom by means of a stoppered funnel.—*Lond. Chem. News*, April 9, 1869, from *Zeitsch. f. Anal. Chem.*

TESTING OPIUM.

Professor Schneider has proposed in the 6th revised edition of the *Pharmacopœia Austriaca*, the following method for testing the goodness of opium. Ten grammes of previously dried and powdered opium is treated with a mixture of 150 grammes of distilled water, to which 20 grammes of pure hydrochloric acid, sp. gr. 1.12, is added; the residue, after extraction, should not exceed 4.5 grammes weight; to the acid fluid 20 grammes

of common salt are added, and the precipitate thereby caused is collected, after 24 hours, on a filter, and the latter washed with a solution of common salt; to the filtrate, ammonia is added, and the fluid left standing again for 24 hours; the crystals which have separated are collected, re-dissolved in acetic acid, and precipitated with ammonia; the precipitate so obtained is washed, dried, and weighed; its weight should not be less than 1 gramme.—*Lond. Chem. News*, April 9, 1869, from *Zeitschr. f. Anal. Chem.*

COLLODION FOR PROTECTING SILVER WARES.

The loss of silver which results from the impregnation of our atmosphere with sulphur compounds, especially where gas is burned, is very great. It has been said that many thousands of pounds' worth go down our sewers annually in the form of dirt from plate cleaning, and the loss of one large house on Cornhill from this source has been described to us as serious. Silver-smiths may, then, thank one of their confraternity—Herr Strolberger, of Munich—for a happy thought. He seems to have tried various plans to save his silver, if possible. He covered his goods with a clear white varnish, but found that it soon turned yellow in the window, and spoilt the look of his wares. Then he tried water glass (solution of silicate of potash), but this did not answer. He tried some other solutions, to no purpose; but at last he hit upon the expedient of doing his goods over with a thin coating of collodion, which he finds to answer perfectly. No more loss of silver, and no longer incessant labor in keeping it clean. The plan he adopts is this:—He first warms the articles to be coated, and then pays them carefully over with a thinnish collodion diluted with alcohol, using a wide, soft brush for the purpose. Generally, he says, it is not advisable to do them over more than once. Silver goods, he tells us, protected in this way, have been exposed in his window more than a year, and are as bright as ever, while others unprotected have become perfectly black in a few months.—*Chem. News*, June, 1869, from *Mechanic's Magazine*.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The 17th Annual Meeting of the Association will be held in Chicago, on the 7th day of September next, at 3 o'clock, P. M. The specific place of meeting and the arrangements for the accommodation of those in attendance, will be announced by the Local Secretary. As this will be the first meeting held in the metropolis of the north-west, and will probably attract much attention in that section, it is earnestly desired that a large and widely diffused representation of the membership will give evidence of a continued and growing interest in the Association. Druggists and pharmacists eligible for membership are invited to present themselves as candidates, and thus aid in extending the Association and increasing its influence.

EDWARD PARRISH,
President.

PHILADELPHIA, 6th mo., 1869.

Editorial Department.

LEGISLATION FOR PHARMACY IN NORTH GERMANY.—The lower house (Reichstag) of the North German Parliament has under consideration a law to regulate industrial pursuits, which has passed the second reading. It contains the following clauses relating to apothecaries and physicians:

“SECTION 29. An approbation (or license), conferred on proof of capability, is required by apothecaries and those persons who designate themselves physicians (including surgeons, oculists, accoucheurs, dentists, and veterinary surgeons) or by equivalent titles, or who are recognized as such by the State, or by a community, or who are to be clothed with official functions. The license shall not be made dependent upon the previous academical promotion to the Doctorate.

“The Federal Council is to designate, in regard to existing wants in different parts of the Confederation, those authorities who are authorized to confer licenses valid throughout its limits, and to prescribe the directions concerning the proofs of capability, and to publish in the official newspapers the names of the licentiates.

“Licentiates will not be restricted in their choice of a locality to practice their profession, except by the regulations for the establishment and moving of apothecaries' stores now existing.

“The Federal Council may relieve persons from the examination in consequence of approved scientific standing.

“All persons who before the enactment of the proposed law had a legal right to practice in any State of the Confederation shall be regarded as licensed for the whole Confederation.”

The latter section was approved by the Medical Society of Berlin, and

in Parliament was warmly advocated by, amongst others, Dr. Løwe, who has resided and practised many years in England and the United States.

In adopting the 6th section, the Parliament *resolved* to request the Federal Chancellor to submit to the Parliament the draft of a law regulating uniformly for the entire Confederation the plan of conducting the apothecary's business and the sale of medicines.

M. Mueller, editor of the *Pharmaceutische Zeitung*, has sent a petition to Parliament asking the final adoption of this resolution,—not that the liberation of the practice of pharmacy, which would be the consequence, would make medicines cheaper or better, or the distribution of stores more favorable, but mainly to overthrow the condition of things brought about by existing laws in reference to the mortgaging of pharmaceutical stores, the capital invested in which is mainly owned by thousands of citizens, whilst the apothecaries themselves possess but a small fraction. M. Mueller had received confidential information from 593 proprietors of stores which were purchased for the gross amount of 15,662,620 thalers (each 70 cts. gold), whilst the cash paid for the same at purchase was only 4,751,200 thalers, leaving 10,967,240 thalers on mortgage, and representing a real value of only 6,855,440 thalers. Of these, 35 stores are free from debt, valued at 304,300 thalers, leaving the actual excess of mortgages *over* real value of the stores 4,416,100 thalers.

A calculation based upon these figures, to embrace the 2905 apothecaries in the Confederation, makes the following exhibit :

Mortgage value of 2905 apothecary's stores, 76,745, 212 thalers.

Amount paid for said stores, 22,295,507 thalers, of which sum about two-thirds, = 14,863,670 thalers were paid out of the private means of the owners. The excess of the mortgages over the real values is 21,633,635 thalers, making thus a total of 36,507,205 thalers, in the event of the final adoption of the clause. Unless a special law should provide for their relief and indemnification, the credit of pharmacutists would be destroyed, and the foreclosure of the mortgages on more than one-half of the North German apothecaries' stores would render their proprietors bankrupt.

The artificial value of stores which this state of things induces is looked upon much as we do on the *good will* of a business, and has largely tended to hamper the liberty of pharmacy in Germany. Those who own the mortgages, unlike owners of stocks, expect to get annually their regular income without regard to the profits, any deficit in which has to be borne by the proprietors, who, in bad circumstances, are liable to foreclosure. It is greatly to be desired that some solution of this difficulty may be arrived at, so as to give greater independence of action to proprietors.

PHARMACY IN HOLLAND.—The scarcity of apothecaries' assistants (according to the *Pharmac. Zeitung*) has induced the "Netherlands

Society for the Improvement of Pharmacy" to pass a resolution to create a new class of assistants, whose education is to be conducted by the apothecaries of Amsterdam. During a period of two years they are to be instructed in the rudiments of the Latin language and in the dispensing of prescriptions. They shall then be regarded as examined apprentices, entitled to compound prescriptions, but shall not rank as assistants. The proposition has been approved by the Medical Council, but at the same time the responsibility to which apothecaries subject themselves was pointed out. In 1869 4 candidates have applied for examination as apothecaries, and 19 as assistants; 5 of the latter passed. M. Geerts, military apothecary, and formerly lecturer on chemistry, at Utrecht, has been appointed by the Japanese government, professor of natural history and chemistry at Nangaski. Another Dutch sanitary officer, Dr. Van Mansvebt, is professor in the same school.

THE THIRD INTERNATIONAL CONGRESS OF PHARMACEUTICAL SOCIETIES AND ASSOCIATIONS.—The Congress at Paris in 1867, at its second session, resolved to hold a third Congress in 1869. The Committee having the selection of the place, consisting of Messrs. Pfeffer, Robinet, Wolfrum, Dankworth and Beckert, has selected Vienna, and has entrusted the General Austrian Apothecaries' Association with the preliminary arrangement. In the *Zeitschrift*, published by this Association, on the 16th of January last, page 29—32, the directory publish a programme, and cordially invite active participation :

Programme.

The Third International Congress will be held in Vienna on the 9th, 10th and 11th of September, 1869, and will consist only of delegates of recognized Pharmaceutical Societies and Associations. Every such society or association may elect one delegate for every 50 of its members, whose function ceases with the Congress. The deputies must bring written credentials from the represented bodies. The objects of the Congress are discussions on professional and scientific questions connected with pharmacy. Members present at the first session shall elect the officers, consisting of a president, two vice-presidents, three secretaries and one interpreter, who shall edit the minutes of the Congress. Questions submitted to the Congress will be referred to committees, and their reports discussed.

The discussion will generally be in the German language, but foreign delegates, unable to speak German, may debate in their own language. The interpreter will intervene to aid them as much as possible.

Essays in writing on the subject under consideration are admissible only by sanction of the officers.

Essays on questions in the programme must be sent in before June 30th, 1869, to be considered. Decisions are by a majority of votes. All societies desiring to take part by deputy should inform the Committee before Sept. 1, 1869, and these and all other communications relative to the Congress are to be addressed to "The Committee of Organization of the Third International Congress, Vienna, City, Anna Street, No. 8, 2d story."

The questions proposed by the Austrian Society may be condensed as follows :

1. Are independent schools of pharmacy advisable ?
2. What advantages will arise from the "Syndic Chambers," proposed at the last Congress ?
3. Is the Medical supremacy in the regulation of affairs between the State and the pharmacutists in consonance with the present scientific and social status of the apothecaries ? and is this intervention for the advantage of the State, the community, or of pharmacy ?
4. What should be done to effect the greatest possible uniformity in strength and composition of remedies used in all countries ?—a continuation of the universal codex question.
5. What are the best methods of assaying the organic alkaloids in drugs ?

We have not yet been informed of the appointment of any delegates from American Institutions. This has arisen from the fact that the Austrian Committee did not issue a letter circular, and their Journal notice was overlooked. There may be several pharmacutists in Europe who might be inclined to attend if delegated in time, or possibly some may contemplate a visit. There is yet time : among the many able German pharmacutists domiciled here, are there not some who may wish to visit the "Fatherland," and say a good word for the liberty of pharmacy under the diploma ?

MASSACHUSETTS COLLEGE OF PHARMACY.—The first annual commencement of this flourishing institution was held on the evening of May 19th, 1869, at No. 12 Temple place, Boston. Addresses were delivered by Samuel M. Colcord, Chairman of the Board of Trustees, and others. The President of the College, Thomas Hollis, Esq., conferred the degree of Graduate in Pharmacy on ten gentlemen, as follows :

Joseph Taylor Brown, Jr.—The substitution of Chicory for Dandelion.

Judson Rollin Cheney—Syrup of Lactucarium.

Thomas Doliber—Assays of twelve specimens of Powdered Cinchona Bark.

Charles Benjamin Reed Hazeltine—Rheum Rhaponticum.

William Ellis Jenkins—Unguentum Hydrargyri.

Henry Ware Lincoln—Pill Making.

John Colby Lowd—Pulverization of Camphor.

George Frederick Holmes Markoe—The substitution of Glycerin for Sugar in some officinal Fluid Extracts.

Charles Augustus Tufts—Mineralogy and its connection with Pharmacy.

Abijah Baker Warfield—Syrupus Ferri Iodidi U. S. P.

Several theses were read by members of the Graduating Class, and the Valedictory was delivered by Prof. Cyrus M. Tracy. We congratulate our New England confreres on the successful initiation of their school of pharmacy, and wish them continued advancement from so good a beginning.

ASSOCIATION OF MEDICAL JOURNALISTS.—At the late meeting of the American Medical Association, in New Orleans, advantage was taken of the presence of many members of the medical press to form "The Association of American Medical Editors." The objects appear to be the culture of friendly relations, unity of effort as regards urging medical education, the collection of vital statistics, and a system of registration, and especially to promote the reception of foreign exchanges. Dr. N. S. Davis, of Chicago, was elected *President*, Dr. Wm. M. McPheeters, *Vice President*, Dr. W. S. Mitchell, *Permanent Secretary*, and Dr. J. B. Lindsley, *Secretary*. We are indebted to Dr. Mitchell for a copy of the proceedings of the organization meeting, and a note soliciting our co-operation, probably under a mistake as to our connection with the medical profession. As the objects of the association lie mainly outside of our own, and as our foreign exchanges are chiefly effected on a money basis, we do not see any course but to politely decline the invitation.

NATIONAL PHARMACOPŒIA CONVENTION OF 1870.—Dr. Wood has issued the following circular to the incorporated medical and pharmaceutical bodies of the United States, viz.:

National Convention for the Revision of the United States Pharmacopœia.

At the meeting of the Convention, held in May, 1860, the following resolutions were adopted:

"1. The President of this Convention shall, on the first day of May, 1869, issue a notice, requesting the several incorporated State Medical Societies, the incorporated Medical Colleges, the incorporated Colleges of Physicians and Surgeons, and the incorporated Colleges of Pharmacy throughout the United States, to elect a number of delegates not exceeding three, to attend a general convention to be held at Washington on the first Wednesday in May, 1870.

"2. The several incorporated bodies, thus addressed, shall also be requested by the President to submit the Pharmacopœia to a careful revision, and to transmit the result of their labors, through their delegates or through any other channel, to the next convention.

"3. The several medical and pharmaceutical bodies shall be further requested to transmit to the President of this Convention the names and residences of their respective delegates, as soon as they shall have been appointed, a list of whom shall be published, under his authority, for the information of the medical public, in the newspapers and medical journals in the month of March, 1870."

In compliance with the above resolutions, the President of the Convention announces that a meeting will be held at Washington, D. C., on

the first Wednesday in May, 1870, and requests that the several incorporated bodies shall, after a revision of the U. S. Pharmacopœia, send the results of their labors to the Convention, and further requests that they transmit to the President the names and residences of their several delegates, so soon as elected, that the list may be published.

GEORGE B. WOOD, M. D.

President of the Convention of 1860.

It will be observed that each body addressed is invited to revise the pharmacopœia and submit the result to the Convention through the delegates they send. It is not expected that every body will have the time or energy to go into all the minutæ of a revisory committee acting for publication, but every College of Pharmacy at least should produce an interleaved pharmacopœia embracing such suggestions of new formulas and criticisms of old ones as they may deem important. In this way the deliberately expressed views of physicians and pharmaceutists of all sections of the country would be placed before the committee of revision and publication, and will have their due weight.

MEETING OF THE AMERICAN MEDICAL ASSOCIATION.—Convened at New Orleans on the 4th of May last and adjourned on Friday the 7th. The meeting was well attended, several hundred members being present. Dr. G. Mendenhall of Ohio was elected President, and Drs. Stone of Louisiana, Sayre of N. York, F. Gurney Smith of Penna. and Moore of Missouri, were the Vice-Presidents. Dr. J. B. Atkinson of Philada., Permanent Secretary. The most important labors of the meeting, outside of its regular programme, were in reference to medical education, nomenclature of diseases, and to the action of the State Societies in carrying out ethical rules and in upholding the standard of education among new members of the profession, by exacting an additional examination by a State board.

Dr. Herrick of Louisiana offered the following additional Section to Article I, of the Code of Ethics:

"Section V. The spirit of trade and of gain from merchandise should by all means be dissociated from the practice of a liberal profession, and it is important that practitioners should not allow their pecuniary interests to compromise their duties to their patients. Therefore, in cities and other communities, where the services of competent apothecaries can conveniently be obtained, physicians should resign to them the whole business and profits of dispensing medicines."

The resolution lays over for action at the next annual meeting at Washington.

THE NEW YORK "APOTHECARIES ACT."—According to the N. Y. Medical Gazette of May 8th, the following is a copy of an Act passed by the Legislature of New York, and then awaiting the Governor's signature:

"Section 1. No person employed or in attendance at any drug store or apothecaries shop shall prepare a medical prescription unless he has served two years apprenticeship in a drug store, or is a graduate of a Medical College or a College of Pharmacy, except under the direct supervision of some person possessing some one of the before-mentioned qualifications ; nor shall any one having permanent charge as proprietor, or otherwise, in any store in which drugs are sold by retail, or at which medical prescriptions are put up for sale or use, permit the putting up or preparation thereof therein by any person, unless such person has served two years as an apprentice in a retail drug store, or is a graduate of a Medical College or a College of Pharmacy.

"Section 2 Any person violating the provisions of this act shall be deemed guilty of a misdemeanor, and shall be punished by a fine not exceeding \$100, or by imprisonment not exceeding six months in the county jail; and in case of death ensuing from such violations the person offending shall be deemed guilty of a felony, and punished by a fine of not less than \$1000, nor more than \$5000, or by imprisonment in the State prison for a term of not less than two years or more than four years, or by both fine and imprisonment, in the discretion of the court.

"Section 3. This Act shall take effect immediately."

The object of the Act is evidently to prevent incompetent persons from dispensing physicians prescriptions, and so far as it accomplishes that important purpose it is praiseworthy; but will it be effective? Firstly, we would query whether it is aimed at the offending junior, who has not been two years at the pestle, or is it directed to the proprietor? If the junior's act causes death, does he or the employer suffer fine and imprisonment? We presume it is for the latter as the responsible party, and yet it might become a question, and should be distinctly stated. So far as we can see, this law takes no cognizance of mistakes and death caused by proprietors and graduates in pharmacy. The worst feature of the bill is that a medical diploma gives authority to practice pharmacy. It is quite usual to laud the manner in which pharmacy is practiced in Germany, France and other continental countries of Europe, yet in those countries physicians are not permitted to practice pharmacy except in the rural districts, and then not within three miles of the nearest apothecary. Is this because the medical education of Europe is inferior to ours? No, it is because the authorities find it safer and to the advantage of the community to separate the prescriber and the dispenser, one being a check on the other. So it should be here. Evidence of a proper qualification should be exacted of all who practice pharmacy, and then regulate the cases of malpractice by the Common Law. This New York law, however, bears only on persons whose period of service has not reached two years; all others, medical doctors included, go scott free so far as this particular law is concerned.

When our Legislature passes a law we trust it will be more comprehensive and effective than this New York law.

THE PHARMACIST.—From an editorial note in the June number we learn that the Publishing Committee of the Chicago College of Pharmacy, having that journal in charge, have determined, encouraged by the success of the first volume, to continue the work as a monthly journal. We presume the size of the number will remain the same. From the statements made there seems to be a strong effort made to sustain the subscription list, which makes the enterprize pay handsomely. The pages speak for themselves, and show an earnestness of purpose highly creditable to Chicago Pharmacy.

THE MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION to be held at Chicago on the 7th, 8th and 9th of September next, promises to be one of the largest and most interesting gatherings of that body. The Chicago pharmacutists have entered heartily into the matter, especially in reference to the exhibition of specimens, preparations, apparatus, etc., to be coincident with the meeting. A circular received some time ago, and which we intended to notice in this number, has been lost or mislaid, so as to prevent our action in that direction. The importance of early action on the part of exhibitors should be well understood. Articles intended for exhibition should be sent, free of charge, to Henry W. Fuller, (Local Secretary) care of Fuller, Finch & Fuller, 24 Market St., Chicago, on or before Sept. 1st, with a list and description of the articles sent. The committee desire to have drugs largely illustrated as possible; then pharmaceutical products, apparatus, glassware, books relating to pharmacy and miscellaneous articles.

THE SANDFORD TESTIMONIAL.—The President of the Pharmaceutical Society of Great Britain, George Webb Sandford, has won for himself golden opinions by his indefatigable labors on behalf of the legislation for pharmacy in England, which resulted in the passage of the pharmacy act last year. So universal seems to have been the impression of the earnest and disinterested character of his efforts, that the idea of a testimonial from members of the Society in England and Scotland seems to have been very popular, and a fund of more than 500 pounds sterling subscribed. This sum was expended in a service of plate valued at \$1000, and the balance devoted to a portrait of Mr. Sandford, by an eminent artist. On the 19th of May a meeting was held at the Society's Hall, at which the presentation was duly made and accepted, followed in the evening by a complimentary dinner at the Free Mason's Tavern, a place in London noted for such reunions. Various speeches were made after dinner apposite to the occasion by Mr. Sandford and Messrs. Evans, Dr. Silver, Mr. Randall, Mr. Deane, Joseph Ince, Dr. Redwood and others. All passed off pleasantly.

MARYLAND COLLEGE OF PHARMACY DELEGATES.—*Baltimore, June 19th, 1869.*—Editor American Journal Pharmacy—*Sir* : At a meeting of Maryland College of Pharmacy, held on Thursday, June 10th, the following persons were elected delegates to the American Pharmaceutical Association which meets in Chicago, September 7th, 1869.

GEO. W. ANDREWS,

J. F. MOORE,

J. F. HANCOCK,

E. N. RUSSELL,

N. H. JENNINGS.

J. J. SMITH, *Secretary,*

Md. College Pharmacy,

THE DRUG LAW.—The joint committees of the County Medical Society, the College of Physicians and the College of Pharmacy, of this city, have not as yet determined on any course of action regarding the passage of a law against the adulteration of drugs and the regulation of the practice of pharmacy. It is to be hoped that the committee of the Pharmaceutical Association having the matter in charge will report a wise and salutary law that will reach the evils proposed to be remedied. The best light we can get at, individually, disposes us to believe that the subject of adulterations will be best approached by a separate law, whilst the practice of pharmacy, including the sale of poisons, should be made the subject of a special act. If a State law cannot be had, as is said to be true, then have it applicable to Philadelphia, and prospectively to make it requisite for every practitioner to have a certificate of qualification. As to the law against adulterations provision must be made for substantiating accusation by chemical analysis and other positive evidences, else the law will be tyrannical and unjustly administered, or it will be a dead letter.

PHARMACY IN ITALY.—We learn through the *Journal de Pharmacie* that the Minister of the Interior of Italy, in his official report, states the number of pharmaceutical shops in that kingdom to be 10,005, which is equivalent to one for every 2426 inhabitants. The papal dominion, embracing 800,000 inhabitants, has 302 shops, making 10,307 for all Italy.

METRICAL WEIGHT IN ENGLAND.—At the meeting of the Pharmaceutical Society, held April 5th, Prof. Redwood brought forward the subject of metrical weights for pharmacy as a subject for discussion, and introduced it with explanatory remarks evidently favoring their ultimate adoption ; but foreseeing the numerous troubles in practice that would arise during the transition period required to get the public accustomed to the new quantities, he proposes, as a temporary compromise, to bend the avoirdupois to the decimal, so as to make a new weight of 61.7 grains, which

is 4 grams, and call it a *tetram*; then a weight representing 8 tetrads to be called an *octram*, = 493.8 grs. to represent an ounce and a third, equivalent to 16 octrams to be called a *libram* or pound, = 7900 grains. In this way it is presumed that a compromise could be effected, and new quantities adopted for old names, for practically that would be the effect. It would be drams, ounces and pounds, with a new value, and not tetrads, octrams and librams. If a measure of this kind should be finally decided on, it appears to us that it would be better to take the half kilo for a pound = 7717 grains, then, provisionally, divide this into sixteen ounces of 482.3 grs., which is very near the troy ounce, with which we are familiar in pharmacy. This, unfortunately, would do but little towards acquainting us with metrical weights, except the half-kilo, as the decimal character would be completely lost in the duodecimal and octaval division, thus :

		Troy.	gr.,	New.	Troy.	
1000 grams	kilogram.	= 15434		= 2 lbs.	32 oz.	15360 grs.
500 "	demi kilo.	= 7717		= 1 "	16 oz.	7680 "
250 "	quarter kilo.	= 3858.5		= $\frac{1}{2}$ "	8 oz.	3840 "
125 "	eighth kilo.	= 1929.25		= $\frac{1}{4}$ "	4 oz.	1920 "
62.5 "	sixteenth kilo.	= 964.625		= 2 oz.	2 oz.	960 "
31.25 "	32d of kilo.	= 482.3125		= 1 "	1 oz.	480 "

Now in France the commercial retail practice has resorted to this very plan of halving and quartering, the half kilo, taking the place of the old poid du marc, and in the formulæ in Guibourt's pharmacy one can see the same carried out in pharmacy. If, then, we determine to introduce the metrical system into the Pharmacopœia here with a compromise, let some such provisional division as that above stated be adopted until, as in money, we can school ourselves to decimal division. There are many who can recollect but a few years back, when the octaval division of the dollar was in almost exclusive use, and it was not until the value of the Spanish $12\frac{1}{2}$ cent piece was reduced by public opinion to 10 cents that they disappeared. Should the metrical system be introduced, the same practical adherence to the old system would follow, until time and self-interest could operate to degrade and reject the old weight.

GERMAN JOURNALS.—Being now in the regular receipt of several German Chemical and Pharmaceutical Journals, we have entered into a business arrangement with Prof. John M. Maisch, by which each number of this Journal will contain a regular contribution of translations from that source. We hope thus to give our readers earlier information of observations and discoveries made beyond the Rhine and the Alps than we have heretofore derived through the French and English journals.

ERRATA.—At page 222, second line from the bottom, read "course" in place of "coarse," as printed.

At page 226, fifth line from the bottom, read "fluidrachms" instead of "fluidounces," as printed.

On Colophonine and Colophonic hydrate.—New substances procured from the products of the destructive distillation of resin by Charles R. C. Tiebborne, M.R.I.A.F.C.S., etc.

Received from the author by post.

Manufacturer and builder, Vol. 1, No 6, June, 1869. Western & Co., 37 Park Row, New York; pp. 32, quarto—monthly.

Two numbers of this well illustrated and printed journal have reached us, which speak well for it as an exponent of its department. It is full of interesting articles, several of which are handsomely illustrated. Its price, \$1.50 per annum, indicates a large circulation.

Report of the Board of Managers of the Pennsylvania Hospital, to the Contributors at their Annual Meeting, held Fifth month 3d, 1869. Together with the accounts of the Treasurer and Stewards; pp. 34, octavo

This report gives an exhibit of the far-reaching usefulness of this most valuable institution. The surgical department, according to the report of the medical corps, has, notwithstanding the absence of any extensive catastrophes, had a full number of cases of accidents, arising largely from the numerous manufacturing establishments which are in and near this city. As these cases are all treated gratuitously if brought within 24 hours of the accident, they are a heavy draft on the resources of the Hospital. Of 1948 patients admitted, 869 were natives, the others of foreign birth.

Proceedings of the State Medical Society of Michigan for the year 1867 and 1868. Detroit, 1869; pp. 116.

In the report on new remedies in this Annual by Dr. S. P. Duffield, he says:

“We have in the mineral kingdom a new element discovered called Thallium, which has the property of entering the circulation and producing the most offensive odor to the perspiration of the parties taking it. Dr. Bunsen was compelled to absent himself from society for four weeks on this account. This one property will kill it for all practical use in medicine. Its action is similar to zinc and iron on the economy, acting as a tonic and producing in large doses severe headaches.”

Brande and Taylor, American edition 1867, page 346, says:

“Experiment has shown that the salts have a poisonous action on animals. They produce griping pains, with trembling of the limbs and a state of paralysis. Less than two grains has sufficed to kill a dog, &c.”

Nothing is said about its quality of affecting the perspiration, nor do we recollect having noticed any quality of this kind attributed to the salts of thallium; nor of researches on thallium by Bunsen. Has not Dr.

Duffield confounded tellurium with thallium? it is well known that that element acts in the way suggested.

Anniversary Oration delivered before the Medical Society of the District of Columbia, September 26, 1866, by J. M. Toner, M. D. Printed by request of the Society, Washington, D. C., 1869; pp. 80 octavo.

This is a valuable contribution to the local medical history of the District of Columbia, embracing many facts bearing on its early physicians, the origin of its medical schools, societies and hospitals, and especially in regard to the hospital system arising out of the late war, and the *Army Medical Museum*. Much that is in it will prove useful to the future medical historian. Allusion is made to the several pharmacopœia conventions since 1820, but we have not been able to find any allusion to the Pharmaceutical Association of the District, or to the meeting of the Amer. Pharmaceutical Association at Washington in 1858. Though not strictly medical institutions, they might well have received a passing notice, in an address embracing so many topics, without detracting from its merits as a contribution to the medical history of the Capital.

Quarterly Summary of the transactions of the College of Physicians of Philadelphia, from Dec. 5, 1866, to Dec. 2, 1868, inclusive; pp. 48, octavo.

This is a small contribution (23 pages) from so eminent a body, as the result of two years "transactions," more than half of its pages being devoted to memoirs of its late members, Dr. T. E. Beasley and Dr. Francis West, prepared at the request of the College, by Dr. E. Littell. These memoirs are carefully prepared and present truthful portraiture of the subjects, which will be recognized by those who knew them as physicians and citizens of Philadelphia.

American Medical Biography. Dr. Joseph M. Toner, of Washington, D. C., has issued a circular to the medical profession requesting information of deceased American physicians, with a view to the preparation of a Biographical Dictionary, which is intended to embrace a notice of every deceased practitioner of regular medicine from the earliest history of this country. All who have information of a reliable character should send in their contributions to this laudible enterprise.

Produits Végétaux du Portugal Considérés au point de vue de l'alimentation et de Matière Médicale, par J. L. Soubeiran et Ang. Delondre. (Extracted from the Bulletin of the Imperial Acclimatation Society, for 1867). Paris, 1867, pp. 26.

La Matière Médicale a l'exposition de 1867, par J. Léon Soubeiran et Augustin Delondre. (Extrait de Journal de Pharmacie). Paris, 1868, pp. 39.

De l'introduction et de l'acclimatation des Cinchonas dans les Indes Néer-

landaises, et dans les Indes Britanniques, par J. L. Soubeiran et Aug. Delondre. Paris, 1868, pp. 165.

The above works have been received from the authors, and possess many points of interest, especially the latter, which is a pretty full resumé of the whole subject of the transplanting of the cinchona. Received too late for notice in this number, we hope to refer to them again. The authors are among the most promising of the younger pharmaciens of Paris, and are industrious. A recent letter from M. Delondre, querying for information relative to opium culture in the United States, informs us that M. Soubeiran and himself have engaged in a very elaborate study of opium, especially in relation to its chemical history from the period when, in a succulent state, it circulates in the proper vessels of the plant, to its entry into commerce, involving nice questions in vegetable physiology, and the part taken by atmospheric oxygen in the modification of poppy juice.

OBITUARY.

DR. ROBLEY DUNGLISON died in Philadelphia on the 1st of April last, at the age of 71 years, having been born at Keswick, in Cumberland, England, in 1798. He graduated in medicine at London in 1819, and came to the United States in 1824, it is said by invitation of Ex-President Jefferson, to take part in the establishment of the University of Virginia, at Charlottesville. In 1833, he accepted a Chair in the University of Maryland, and in 1836 again transferred his services to the Jefferson Medical College, in Philadelphia, then just reorganized, and occupied the Chair of Institutes of Medicine for thirty-two years, until a few months before his death, contributing largely to the extraordinary success of that College, of the Faculty of which he was Dean. Dr. Dunglison's powers as a lecturer were remarkable, illustrated by a ready memory and extensive erudition. His reputation as a medical writer has long been very prominent, and his writings, judged by their continued publication, are among the most successful from the American medical press. Those most familiar to us are his "Medical Lexicon," and his "New Remedies," the latter intended to embrace therapeutic novelties as they became known in the journals, the former a vast gathering together of the facts and definitions of the medical sciences in alphabetical order. Perhaps few persons have been better qualified for such a work, as he united extensive reading and a good memory with indomitable perseverance. Dr. Dunglison will take his stand as an author more as a compiler than as a discoverer, and did far more to notice and bring forward the observations of others, than to originate new facts based on an experimental study of his profession, having never sought an active practice, the true field in which medical facts and theories should be tested.

At the meeting of the College of Physicians of Philadelphia, on May 5th, the following, among other resolutions, were passed :

“ *Resolved*, That in the death of Dr. Dunglison the American medical profession has lost one of its highest ornaments, the professional corps one of its most distinguished members, physiological science one of its most able expounders, and medical literature one of its most useful, erudite and abundant authors.”

PROF. J. NICKLES, of the faculty of sciences at Nancy, died early in April, from the irritating effects of Fluorine or one of its compounds, in the investigation of which he was engaged. Prof. Nickles was suffering from a severe cold at the time, which was greatly aggravated by the fluoric compound. He was the foreign collaborator of the “*Journal de Pharmacie*,” and the scientific correspondent of the *American Journal of Science and the Arts*. The Editors of the *Journal de Pharmacie* promise a more detailed notice.

LOUIS FELIX JOSEPH GAROT, pharmacien of Paris, was born on the 8th of March, 1798, and died on the 7th of May, 1869, at Versailles, to which city he had retired after practising pharmacy for 45 years. He was a pupil of the elder Robiquet, and afterwards served in the hospitals and the Pharmacie Central, the friend of Guibourt, Soubeiran, Girardin and others, who, with himself, were an honor to their profession. Various of his papers are interspersed in the volumes of the *Journal de Pharmacie*. In 1847 he lost a son of great promise, and about the same time M. Dorvault married his daughter.

M. Cap, from whose notice we extract these lines, says Garot was the type of a well informed, conscientious and disinterested pharmacist. Charged on several occasions with different sanitary and benevolent labors in the public service, he has always acquitted himself with devotedness and intelligence ; but it was the amenity of his disposition and his equible temper and goodness of heart that won for him the general affection of his friends.

DR. CHARLES D. MEIGS, of Philadelphia, formerly Professor of Obstetrics, in Jefferson Medical College, died at his residence at Media, near this city, where he had retired some years ago, on the 20th inst., in the 78th year of his age. Dr. Meigs was a native of Georgia, having transferred his residence to Philadelphia in early life. Among the most noted practitioners in his branch, he was elected to the Jefferson School, where during a long series of years he lectured to a large class of students. Dr. Meigs was noted for his scholarship, and was the author of several medical works. As a lecturer he was fluent and eloquent, but erratic and unsystematic, yet always popular with his class. As a practitioner he enjoyed an undiminished reputation, and as a citizen was widely known and respected.

THE
AMERICAN JOURNAL OF PHARMACY.

~~~~~  
SEPTEMBER, 1869.  
~~~~~

ON A NEW AND SIMPLE PROCESS FOR FLUID EXTRACTS,
BY WHICH ANY DRUG MAY BE EXHAUSTED BY
PERCOLATION AND WITHOUT HEAT.

BY SAMUEL CAMPBELL, of Philadelphia.

The subject of fluid extracts is one that has attracted the attention of the most eminent men of our profession, and has called forth numerous essays, elaborate and seemingly unanswerable in their arguments and forms. Messrs. Graham, Squibb and Procter, than whom we have no better authorities at the present time, have each in their turn advanced their views on the subjects of percolation and menstruums required to form perfect fluid extracts, and no doubt have given to the medical world a beautiful and substantial theory; and yet if any one will take the time and trouble to perform the simple experiments suggested in this paper, he will find that, in following too closely the suggestions of our teachers, we have overlooked the simple and yet, in my opinion, the most important step to successful percolation, viz., *maceration*. Holding a prominent position in an establishment where all the officinal preparations are prepared largely, I was induced to try and see whether the problem could be solved whereby, in making fluid extracts, heat could be avoided, and whether the great waste or use of alcohol could be dispensed with in their preparation, and, to my satisfaction, I have had no difficulty whatever in thoroughly exhausting any substance of any character with the proper men-

struum in the proportion of one pint for every sixteen troy-ounces, by allowing it to macerate for four days in a conical percolator, previous to percolation. The subject is not a hastily formed theory, but is one that is offered as the result of actual experiments with its results and residues open for inspection and consideration. I have taken the liberty to differ from the prescribed menstruum laid down in the Pharmacopœia, by following out Mr. A. B. Taylor's suggestions on the use of glycerin as a solvent for the various active properties of drugs, and have been surprised at the results obtained from its use ; and it is with pleasure that I fully confirm his views regarding its use and adoption by the present revisers of the Pharmacopœia, in the various menstrua. In all the experiments I used Bower's Glycerin. I have adopted as a grade of fineness of powder for percolation, that which is known in the Pharmacopœia as moderately coarse, or which will pass through a sieve of forty meshes to the linear inch, as one within the means of any retail pharmacist to powder himself. I find that about five-eighths of the whole quantity can be obtained of this fineness by means of a Swift's drug mill ; also, I deem a greater fineness of powder than this as being an unnecessary and unwarrantable waste of time and physical force, since maceration is what is wanted, and not fineness of powder, to make a successful percolation. The common glass funnel I have found to be the best percolator, both in point of convenience and cleanliness, also its conical shape, allowing the proper expansion of the material whilst macerating, previous to percolation. The query has frequently presented itself to my mind as to what is a fluid extract, or what is it supposed to, or should it represent. If I understand aright, a fluid extract is a concentrated tincture, or solution embodying all the sensible and remedial properties of a drug or drugs, and should represent the drug as it is thrown into the hands of the pharmacist from nature, not one or two active principles of the drug alone to be represented, but should approximate as closely as possible in its character and properties to the crude drug itself, in smell, taste, and remedial effects ; bearing these points in mind, I undertook the following experiments, with what success the samples will prove. The officinal fluid extracts are

divided into four classes, viz., alcoholic, hydro-alcoholic, acetic and saccharine, but by my method will consist of only two classes, viz., alcoholic and hydro-alcoholic. The first or alcoholic, with one-fourth glycerin, and they may be enumerated as follows: buchu, lupuline, valerian, veratrum viride, ginger. The menstruum used in the hydro-alcoholic or second class, composed of one-half alcohol, one-fourth water, one-fourth glycerin; under this head are the following, including the saccharine and acetic fluid extracts: cimicifuga, cinchona, colchicum root, colchicum seed, conium, dulcamara, ergot, gentian, hyosciamus, ipecac, rhubarb, sarsaparilla, sarsaparilla compound, senna, serpentaria, spigelia, taraxacum, ura ursi. The Pharmacopœia directs that a fluidounce of a fluid extract should faithfully represent one troyounce of the crude drug, excepting cinchona and wild cherry bark, which are directed to be one-half the above strength, both of which drugs I have prepared of full strength, so that there should be no exception as to the uniform strength of all adopted. In order to prove the accuracy of my method in exhausting cinchona bark, I took the residue in percolator after I had obtained sixteen fluidounces of extract from sixteen troyounces of the bark, dried it, redampened it, and repacked it in the funnel, and passed six pints of dilute alcohol through it until it came away colorless, then evaporated it to a soft extract, which weighed two drachms, of a slightly nauseous taste, but devoid of bitterness, thus proving conclusively the success of my experiment, as to the almost entire exhaustion of the drug of all its active matter. Cinchona bark has been admitted to be one of the most difficult drugs in the whole catalogue to exhaust. In making a fluid extract of wild cherry bark, I used a menstruum composed of equal parts of glycerin and water, making it as I said before, ounce for ounce, and it will be found to faithfully represent the bark having the natural taste and odor in a marked degree.

My method consists in first obtaining a powder, moderately coarse, dampening it with the menstruum, and then packing uniformly in a glass funnel, having previously placed a cork in the end of the funnel, also a piece of sponge in the neck moistened with the liquid; then covering the surface with a disc of

paper, and pouring on the remainder of menstruum in the proportion of sixteen fluidounces for every sixteen troyounces of drug. Cover over so as to prevent evaporation, and allow to macerate for four days; after that time remove the cork, and use a displacing liquid of either strong alcohol or dilute alcohol, or water, corresponding to the menstruum employed, (omitting the glycerin) by pouring it over the surface of percolator in order to displace the original menstruum; when sixteen fluidounces for every sixteen troyounces have passed through, it will be finished, and will be found to be perfectly exhausted, thereby avoiding heat, and any large use or waste of alcohol. I find that it requires about an equal measure of the displacing liquid to displace the first or original liquid through.

The difference between my method and that generally employed, consists simply in adopting a uniform grade of fineness of powder for all substances, in long maceration and in the use of glycerin. The officinal method is to reserve the first three-fourths, exhaust and evaporate to one-fourth; in my method I give a long maceration and percolate the quantity at once, thereby avoiding reservation, evaporation, and simplyfying the process very much, and furnish a much better product.

The experiment is worth a trial, and I feel satisfied that if faithfully followed out will gratify any one with the result, and will enable him to dispense reliable fluid extracts fully representing the crude drug, which in the present time is a great desideratum.—AUGUST 6, 1869.

PHARMACEUTICAL NOTICES.

BY WILLIAM PROCTER, JR.

The following formulæ, having more or less merit, have been used in Philadelphia, and are offered to our readers.

Tinctura Rhei Dulcis.

Take of Rhubarb, coarsely powdered, eight troyounces.

Liquorice root,	"	three	"
Aniseed,	"	three	"
Orange peel,	"	one	"
Cardamom seed,	"	four drachms.	

Mix the powder, moisten them with half a pint of the diluted alcohol, pack firmly in a conical percolater, and pour on diluted alcohol until a gallon of tincture has passed, which should be shaken to render it uniform.

Pilulæ Terebinthinæ Composita.

Take of Copaiba, three troyounces.

Dried Sulphate of Iron, in fine powder, a troyounce and a half.

White Turpentine, four troyounces and a half.

Cubebs, in fine powder, six troyounces.

Calcined Magnesia, three drachms.

Triturate the magnesia, which should be recently calcined, with the copaiba previously warmed, add the turpentine, previously freed from impurities by straining, then the sulphate and cubebs, and incorporate them well together. Lastly, when by standing the mass acquires the proper consistence, divide it into five grain pills. This mass by age becomes too hard for use owing to the oxidation of the volatile oils, and should be prepared in quantities suited to the demand. The pills, if to be kept long, should be coated with sugar or gelatin.

Tinctura Kino Composita.

Take of Opium, in powder, two drachms.

Kino, “ two drachms.

Cochineal, “ two drachms.

Camphor, “ three drachms.

Cloves, “ three drachms.

Diluted alcohol, two pints or q. s.

Mix the powders and prepare a quart of tincture by maceration with agitation, or by percolation as preferred.

This is a favorite preparation for Diarrhœa. Each teaspoonful contains about half a grain of opium, and three quarters of a grain of camphor.

Tonic Narcotic.

This formula originated with Prof. Samuel Jackson, late of the University of Pennsylvania, who formerly prescribed it. Its complexity and want of homogeneousness are objectionable,

though its therapeutic power must be very decided when prescribed judiciously :

R Extracti opii aquosæ	3j.
Ext. Cannabis Indicæ,	5iss.
Extr. Belladonnæ,	3ss.
Extr. Conii,	3j.
Extract. Cinchonæ, (Wetherill's)	5ij.
Strychniæ nitratis,	gr. ss.
Ol. Caryophylli,	gtt v.
Ol. Aurantii Cort.	gtt x.
Ol. Myristicæ,	gtt iij.
Alcoholis,	
Aqua, aa.	q. s.
Syrupus Aurantii Cort.	f3j.

Dissolve the ext. cannab. in half an ounce of alcohol ; dissolve the strychnia, opium, belladonna and conium in half an ounce of water ; the extract of bark in an ounce of diluted alcohol, then mix these with the syrup, and lastly add the volatile oils and mix with sufficient diluted alcohol to make the whole measure three fluidounces. Dose, 5 drops, three times a day, previously shaking the vial.

Tyson's Antimonial Powders.

Recipe No. 1.—

R Antimonii oxidi,	gr. ij.
Calcis phosphatis,	gr. xviii.
M. ft. pulvis.	

Recipe No. 2.

R Antimonii oxidi,	gr. ij.
Potassæ sulphatis,	
Calcis phosphatis, aa.	gr. ix.
M. ft. pulvis.	

Extractum Gallæ Compositum, (for tooth ache.)

R Gallæ pulv., No. 40,	four troyounces.
Pyrethri rad. pulv., No. 40,	three troyounces.
Opii pulveris,	half a troyounce.
Glycerinæ,	a troyounce.
Alcoholis Diluti,	a sufficient quantity.

Mix the powders, moisten the mixture with three fluidounces of the diluted alcohol mixed with the glycerin, and pack in a conical percolator. Then pour on diluted alcohol until a pint of tincture has passed. Evaporate on a water bath to a soft extract and preserve it for use.

This extract has been used for thirty years as an application to painful decaying teeth where the nerve pulp is sufficiently accessible to bring the extract into contact with it. The glycerin has been added more recently to prevent the extract from becoming friable. A solution in which these quantities are present in a pint, odorized with oil of gaultheria, makes a good liquid preparation, applied on cotton. The soft extract is applied by inserting a pellet in the cavity and then a wad of cotton, advising the patient to reject the saliva which freely flows from the action of the pyrethrum on the salivary glands.

Ointment for Hemorrhoids, by the late Prof. W. R. Fisher.

Take of Sulphate of Morphia,	three grains.
Extract of Stramonium,	thirty “
Olive Oil,	sixty “
Carbonate of Lead,	sixty “
Lard Cerate,	three drachms.

Rub the extract, if not uniformly soft, with a few drops of water; add the powders and olive oil, and rub till perfectly smooth, and then incorporate them with the cerate.

Hufeland's Powder.

Take of Calcined Magnesia,	an ounce and a half.
Powdered Rhubarb,	three drachms.
Powdered White Sugar,	half an ounce.
Oil of Sweet Fennel,	forty-eight drops.

Mix intimately.

Compound Syrup of Wild Cherry.

The following is a cough syrup much prescribed by the late Dr. P. B. Goddard :

Take of Sulphate of Morphia,	two grains.
Oxysulphuret of Antimony (Kermes, U.S.P.)	four grains.
Syrup of Wild Cherry Bark,	four fluidounces.

Rub the powders in a mortar with a little of the syrup until perfectly smooth, and then add the remainder and mix them. The sedative power of this syrup was sometimes increased by adding from two to four grains of cyanide of potassium to the whole mixture, in which case the cyanide should be dissolved in a few drops of water and added to the mixture. The dose is a teaspoonful three or four times a day, and has been useful in many cases.

ON TINCTURA OPII CAMPHORATA.

By J. C. WHARTON, in a note to the Editor.

Dear Sir,—I send you a formula for *paregoric* which can be used to much advantage, and is in my judgment perfectly conformable to the authority of the U. S. Pharmacopœia. The preparation of this tincture by this formula is, in regard to *time*, scarcely more than a matter of *admixture* and *filtration*. A little calculation will show that the ingredients and proportions are precisely the same as in the U. S. Pharmacopœia, save that laudanum is substituted for opium (an allowance being made for the additional diluted alcohol). The magnesia is essential to produce a clear and elegant preparation.

Yours, truly,

J. C. WHARTON.

Nashville, July 24, 1869.

Tinctura Opii Camphorata, U. S. P.

R Laudanum, 6 fluidounces.

Benzoic Acid, 225 grains.

Camphor, in fine powder, 150 grains.

Oil of Anise, 225 minims.

Clarified Honey, $7\frac{1}{2}$ troyounces.

Carbonate of Magnesia, 2 troyounces.

Diluted Alcohol, a sufficient quantity.

Rub the camphor, oil of anise, honey and magnesia together well. Then add by degrees seven pints and two fluidounces of diluted alcohol, rubbing in a mortar till a uniform mixture is obtained. Filter, and after the liquid has ceased to pass add sufficient diluted alcohol through the filter to displace the re-

mainder, or enough to make the filtrate measure* about seven pints and a half. Lastly, add the laudanum and benzoic acid to the filtered liquid, in a bottle, and shake until the acid is dissolved.

ON SYRUP OF CITRIC ACID OF THE PHARMACOPŒIA.

MR. EDITOR:

Sir,—Your earnest request in a late number of the "Journal" for each and all to contribute something for the consideration of the committee of revision for the next edition of the Pharmacopœia, has induced me to offer the following:

In the process for syrup of citric acid of the Pharmacopœia of 1860, it directs to "rub the citric acid and the oil of lemon with a fluidounce of the syrup, then add the mixture to the remainder of the syrup, and dissolve with a gentle heat." This involves the use of a fire,—often not at hand,—also the soiling of capsule and mortar. The capsule ordinarily used in the shops for such purposes being much larger than is necessary, causing the loss of more or less of the material; also in the use of the mortar. Beside this, the time necessary is quite an item.

As a substitute for the officinal manipulation, I would suggest that the citric acid and oil of lemon be rubbed together in a mortar, then added to the required amount of syrup in a bottle in which it is intended to be kept, and well shaken. Set aside; in a short time the citric acid will be found to have entirely dissolved, making a preparation fully equal in appearance to the officinal, and which has the advantage of "being marked for the simplicity and directness of its manipulation."

Yours, &c., JOSEPH HARROP.

Leavenworth, Kansas, July 29, 1869.

CRITICAL NOTE ON PERMANGANATE OF POTASSA AS A TEST FOR DISTINGUISHING CHLORINE, BROMINE AND IODINE.

BY GEORGE McDONALD.

In several chemical journals there has recently appeared an

* The variable consistence of the honey will alter the result very slightly.

article on the ready distinction of *chlorine*, *bromine* and *iodine*, by means of *permanganate of potassa*.

As so ready a method of distinguishing between these substances would, if accurate, be of much practical value, I was induced to make a trial of the method for my own satisfaction.

The substances used in my experiments were chloride of sodium, iodide of potassium, and bromide of potassium. Of each of these I made two *neutral* solutions, one of the strength of one part of the respective salts to thirty parts of water, and the other one part to two hundred and forty parts of water. I also made two solutions of permanganate of potassa,—one a saturated solution (1 in 16), and the other quite dilute. The results obtained I give below, under the respective heads of the salt experimented with.

Chloride of sodium.—When a few drops of the saturated solution of permang. potass. is added to the strong *neutral* solution, no immediate change is produced. After a short time, however, the pink color of the solution changes to a *reddish* color, and after the lapse of a day or two to a *brownish* color, and if allowed to stand long enough a *brownish precipitate* is thrown down, and the supernatant liquid becomes clear. These changes are accelerated by the action of heat, or by the addition of a few drops of nitric acid. When the dilute solutions are used no change is apparent, even after the lapse of a day or two, beyond the characteristic pink coloration produced by the permanganate.

Iodide of potassium.—When the saturated solution of potass. permang. is added to the strong solution, a *brownish precipitate* is produced, and the supernatant liquid has a brownish color, with odor of free iodine; but on standing becomes colorless.

The addition of nitric acid to the original solution causes an immediate liberation of iodine.

With the dilute solutions the effects produced are the same, except that no *precipitate* falls until the lapse of a few hours after the addition of the permanganate.

Bromide of potassium.—With the strong solution (of this salt) the saturated solution of permanganate gives a *brownish precipi-*

tate, and the supernatant liquid has a *reddish* color, gradually passing to *brownish*, and, if allowed to stand, becoming perfectly clear.

On acidifying the original solution with nitric acid no change is produced, except at a high temperature when bromine is liberated. If, however, a drop or two of the saturated solution of potass. permang. is added to the acid solution, or the liquid acidified after the addition of potass. permang., bromine is immediately liberated *without* the application of heat. At the same time similar reactions are obtained as when the potass. permang. is added to the neutral solution.

In the dilute *neutral* solution potass. permang. produces no effect; but on the addition of a drop or two of nitric acid the liquid assumes a brownish color, due to the liberation of free bromine.

The *rationale* of these reactions is that the permanganate gives up part of its oxygen to the halogens, converting them into chlorates, iodates or bromates, and brown hydrated dioxides of manganese is precipitated. At the same time a small quantity of chlorine, iodine or bromine is liberated, the two latter in sufficient quantity to give color to the supernatant liquid even in very dilute solutions. The reactions are of course much more energetic in strong solutions than in dilute ones. In fact, in the case of dilute solution of chloride of sodium it is so slight as not to be discernible.

From the foregoing experiments it will be seen that with *moderately strong* solutions of the three halogens under consideration, the reactions with permang. potass. are so nearly alike in all respects that it would be unsafe to place any confidence in the indications.

The method therefore is only applicable to *very dilute* solutions, and even then care must be taken that the permang. potass. is also in *very dilute* solution, and added *drop by drop*, as any excess beyond what the iodide or bromide would decompose would be apt to give the liquid its own characteristic tint.

Moreover, the method is applicable only to *simple* solutions of *haloid salts*, and its use implies some previous knowledge by the operator, both of the composition and the strength of the solu-

tion under examination. In a compound solution of a chloride and an iodide this test *per se* would be of but little use, as only the presence of the iodide would be indicated, and recourse to other methods would be necessary for the detection of the chloride.

In a solution containing no haloid salt whatever, as, for example, a solution of a nitrate or a sulphate, this test would indicate the presence of a chloride,—that is, no change would be produced on the addition of the permanganate. And in a solution containing organic matter the test would in many instances be rendered worthless, as the permanganate is readily decomposed by such substances with changes very similar to those produced by the action of iodides or bromides.

Cairo, Ill., July 26, 1869.

THE TRUMPET PLANT.

(See July number of this Journal, page 292.)

MONTICELLO, FLA., July 29, 1869.

Editor American Journal of Pharmacy:

Dear Sir,—The trumpet plant known among us is the *Sarracenia flava*. It is a very peculiar plant, resembling somewhat a small straight horn. The upper and larger extremity is partially covered with a spotted hood. The flower is of a greenish yellow color. It grows in abundance throughout this section of the State.

Respectfully, J. DABNEY PALMER.

DARBY'S PROPHYLACTIC FLUID.

The following note, received from the proprietors of this preparation, purports to give the exact composition of the "fluid." The writers evidently mean the composition of the solid contents of the liquid. As they refrain from giving either the proportion of saline matter or the process of making it, they evidently do not intend to make their communication useful to the readers except as abstract information:

OFFICE JOHN DARBY & Co., 161 William St., New York.

Editor American Journal of Pharmacy:

Dear Sir,—We herewith send you the formula, giving exact composition of Darby's Prophylactic Fluid, an article we are introducing as a disinfectant and therapeutic agent, and respectfully request you to lay it before the profession through the columns of your paper:

Hypochlorite of Potassa,	30 per cent.,
Pernanganate of Potassa (or Soda),	10 “
Bicarbonate of Potassa,	33 “
Chloride of Potassium,	25 “
Biborate of Soda,	02 “

The chlorine and permanganic acid are the only active agents; the other materials modify the action, and remove by their detergent properties all eliminated materials.

Very respectfully,
JOHN DARBY & Co.

In publishing the note of Messrs. John Darby & Co. we desire to make it useful, if it possesses any merit; and therefore hazard the following opinion of its *modus præparandi*: We believe it to be a solution of hypochlorite of potassa, parallel with the Liquor Sodæ Chlorata of the British Pharmacopœia, or of the original “Labarraque's solution of chloride of soda,” in which carbonate of potassa is used instead of carbonate of soda, mixed with a solution of permanganate of potassa and borax. Our reason for this is based solely upon the statement of the note that it contains *Bi*-carbonate of potassa, as we have not examined the “fluid.” If made from chloride of lime by the U. S. P. process for solution of chlorinated soda, the carbonated alkali would not be bicarbonate, but carbonate of potassa. By carefully evaporating the “fluid” to dryness its solid content could be ascertained, and then it is not difficult to fix the proportions of permanganate and biborate. The article on page 393, by Mr. McDonald, has some bearing on this subject, but with quite a different object. If this mixture of these disinfectants should prove useful, it is probable that a similar mixture of Solution of Chlorinated Soda and Permanganate of Potassa would act quite as well, and might be prescribed extemporaneously by the physician; and, if sufficiently permanent, be adopted in the U. S. Pharmacopœia.—ED. AM. JOUR. PHARM.

CASTOR OIL AND GLYCERIN POMATUM.

BY THE EDITOR.

A correspondent says: "You would oblige the pharmacutists of Philadelphia by giving a formula for castor oil and glycerin pomade, so that every one can make it, in your next number."

The Editor is disposed to comply with this request, though he thinks there are many of his readers who have recipes as good, or perhaps better than the one he now communicates:

Castor Oil and Glycerin Pomatum.

Take of White Wax, an ounce and a half,
Glycerin, pure, two fluidounces,
Castor Oil, twelve ounces,
Oil of Lemon, five drachms,
Oil of Bergamot, two drachms,
Oil of Lavender, one drachm,
Oil of Cloves, ten drops,
Annatto, ten grains,
Alcohol and Water, a sufficient quantity.

By a moderate heat dissolve the wax in a small portion of the castor oil (one-fourth), and triturate it with the remainder of the oil and the glycerin till it is quite cool; then add volatile oils. Lastly, rub the annatto with a drachm of water till smoothly suspended, add a drachm of alcohol, and stir the coloring into the pomade until it is thoroughly mixed.

It is quite necessary to use the blandest castor oil, and to heat it as little as possible, to avoid the ricinic odor which excessive heat develops in castor oil.

ON PHARMACY IN THE UNITED STATES.

(Read at the Session of the Central Stelle fuer Gewerbe and Handel at Stuttgart.)

By JOHN FABER, late of New York.

The task being allotted to me to describe the present state of Pharmacy in the United States, I must, before entering upon

my subject, draw your attention to the fact that, up to the present moment, there exist no special laws regulating the drug-business, as it forms a part of the general free trade; that, consequently, there is no governmental supervision nor any authorized tariff.

Several States, among which is the State of New York, in their Legislatures, have provided special laws for that purpose, in order to prevent others than qualified persons to embark in that responsible business. The legal requirements for the opening of a retail drug store consisted in the following:—

An apprenticeship of four years with a druggist having a diploma either from Europe or from one of the Colleges of the United States; two seasons of lectures in one of the Colleges of Pharmacy, and a diploma of the same. This was all that was requisite to entitle him to the right of establishing himself wherever he thought proper; because, in case of ill success, nobody else than himself would suffer by his losing the capital invested in his undertaking.

By force of that law, the College of Pharmacy in New York, in the year of 1830, after having repeatedly fined, caused a number of establishments (the owners of which could not prove their legal qualification) to be closed. But they appealed to the Supreme Court of the United States, which declared this law unconstitutional, it being not in accordance with the general freedom of trade, as sanctioned by the Constitution of the United States.

On the strength of that decision, those that were thus interrupted in their business commenced an action against the College of Pharmacy of New York, which had to pay such heavy damages, that it took that institution over fifteen years to recover from it.

This state will, therefore, continue until corrected by legislation of the Congress of the United States, for which purpose more claims are constantly arising among Pharmaceutists and the public in general.

A special law is wanted for this business—that is, *the proof of qualification for its duties*—while nobody claims a special protection or privilege for it.

Certainly the question arises: How can a drug-store be managed conscientiously and scientifically without inspection by the authorities?

This question is easy to be answered; but, in order to draw a parallel between the United States and Germany, I find it necessary to enlarge upon the subject by stating that, in the United States, there are at least four drug stores to one in Germany.

The next question immediately will be this: Where one drug-store hardly can make a living, how is it possible that four of them can exist without resorting to dishonorable means?

But have we not in Germany numbers of drug-stores which are allowed to connect other articles with their establishments, such as the sale of spices, sugar, coffee, tea, &c.?

I always bear a kind remembrance of my apprenticeship in Germany. I had the good fortune to find a principal who possessed a warm scientific zeal, to whom I still gratefully owe my lively interest in our profession.

He bought himself an establishment, to which was attached a considerable trade in groceries, spices, &c., in a small country place. I dare fairly say that full one-half of our sales were from these articles. But, at the same time, I enjoyed the most thorough theoretical and practical instruction. It is not too much said when I assert that all officinal, chemical and pharmaceutical preparations, with the exception of the few that were allowed by the Pharmacopœia to be purchased, were prepared in our laboratory.

At the same time, the dispensing department was conducted with the most scrupulous exactness. Our establishment enjoyed a wide-spread reputation, and it frequently occurred that prescriptions from other places and considerable distances found their way to us.

Had my principal and tutor been restrained only to the strict, legitimate retail sales and prescriptions, he would not have had the means to answer to all his responsible requirements so well in keeping up his perishable stock in a fresh state, much less to pay the interest on his capital if he had needed it.

By this example, I try to explain how so many druggists can exist in the United States.

I have had occasion to notice, since my return to Germany, that many changes have taken place in the management of pharmacies. Gradually there appear to be kept, particularly in larger cities, a number of retail articles, as foreign patent medicines and toilet preparations. They are called for, their sale is quickly made, and does not disturb the legitimate business much.

Just so, but in a more extended measure, the numerous retail drug-stores in the United States find their living; and it depends upon the qualification, the conscientiousness and the management of their owners, whether they obtain a reputation as thorough apothecaries, as venders of drugs, or as simple dealers in patent medicines, among the public and physicians, each class of which select their pharmacies with the strictest scrutiny.

In the United States, the free competition takes the place of inspection by authority. This is admitted by all the German pharmacutists there; for the public exercises a never-relaxing control, which extends even to the most indifferent articles. In order to explain this, I find it necessary to enter more into that subject. In the first place, the public refuses to take any article without being properly labelled, with the name of the firm and the name of the drug upon it. A druggist who sells an inferior quality of rhubarb, stale camomile, a rancid salve, or a spoiled, fermenting syrup, will be known very quickly, and the public will desert him, because it will find another drug-store, not far distant, where it can get these articles more carefully kept, or in a fresher state.

If he attempts, in putting up prescriptions where dear preparations are ordered, for the sake of gain, or in order to sell cheaper than his competitors, to commit fraud by not dispensing the prescribed quantity, the practising physician will immediately become suspicious by being disappointed in the expected effect on his patient, and the prescription will be put up for the future in a more reliable establishment. All this the apothecary in the United States is well aware of; and, for this reason, every one, for the sake of competition, makes his utmost effort to attend to his business promptly and conscientiously, and to furnish the best of quality at most possible moderate rates.

That the position of the apothecary, under these circumstances, is a very burdensome one cannot be denied. I am well aware of the current opinion that everything is kept in American retail drug-stores that promises a return of profit—even from brooms down to axle-grease.

It is quite true that there is no law that forbids the apothecary to keep anything that promises a good sale, and there may be a few stray establishments where you can find these articles; still, these are exceptions, not the rule. Their owners do not aspire to the title of apothecaries, and they are conscientious enough either to confine themselves to the selling of drugs, or to separate the dispensing department from it, and to employ competent apothecaries for this purpose.

But I can remember, from former times, many an establishment in Germany, where articles such as *shoe-blackening*, *inks*, *varnishes* and *cordials* were largely manufactured, while, at the same time, the dispensing department was conducted with the most conscientious accuracy. In general, the gratifying fact is to be noticed in the United States, that, in proportion as the scientific attainments of the apothecary improve, he awakes more to the feeling that his profession ranks above ordinary business, that the confidence of the public is his sole support, and that he becomes constantly more aware of his responsible position. It will not be long before the several States will enact laws, requiring a proof of scientific qualification of those that want to practise pharmacy.

Until now the pharmacutists, in their own specific interest, have taken the scientific improvement and the elevation of their professional standing into their own hands. Numerous associations have formed all over the land, constituting themselves as Colleges of Pharmacy, obtaining charters (*i. e.*, corporation rights) from the Government. Some of the colleges have scientific journals, and have regular meetings in which questions of scientific and common business interest are discussed. They are bound by laws to open a course of scientific instruction. They hold usually winter courses of lectures upon different branches of pharmaceutical science, according to their means. The older and more prosperous colleges entertain pharmaceutical

laboratories. There are, at present, about twelve such colleges and societies in the United States, besides the great American Pharmaceutical Association.

The most perfect institution, in this respect, is the Philadelphia College of Pharmacy. It employs, for all its branches, competent professors, has complete collections and a well-fitted laboratory. The lectures, generally, are held evenings, so as to facilitate the attendance of the clerks to them. Among the students, there are to be found, besides apprentices and clerks, owners of drug-stores, who go there to improve their insufficient knowledge. The druggist who can show that he has attended the courses of lectures in one of these colleges, and is in possession of its diploma, will always unfailingly enjoy the preference of practising physicians and the public at large.

The existence of so many drug-stores is principally secured by the sale of sundry retail articles and pharmaceutical preparations. The profits derived from these sales furnish to the poor apothecary the means to dispense good medicines by procuring them in good quality, and keeping a fresh and select stock of medicines, and to throw away stale ones. It is proverbial there, even among the German pharmacutists, that nothing is more imprudent than to sell old or spoiled drugs. There is no such thing as a uniform, legal tariff. The price of medicines is always regulated by local circumstances, and the financial circumstances of the patrons of an establishment. But there is sufficient competition in the business to warrant against exorbitant prices. Establishments which enjoy a large reputation, and are more elegantly fitted up, generally obtain better prices, and become patronized by the rich, while people in ordinary circumstances can find drug-stores at moderate prices.

As there is no privilege attached to that business, the price of retail drug-stores, consequently, is very varying. Reputed establishments that enjoy a large patronage will realize much more than such as cannot prove this advantage. It often happens that retail drug-stores are sold below their inventory value, because their owners are either incompetent or did not apply themselves to business.

As the government does not exercise a control over the drug

stores, and as it is well known to the public at large that among many capable and conscientious apothecaries there are many unqualified ones, or, even qualified, but unscrupulous and rapacious ones, it is very careful in the selection of a retail drug store. A mistake in the retail trade, such as giving camomile instead of elder flowers, is sufficient to hurt the credit of an establishment in its neighborhood, for the public calculates that, if a mistake can be committed in the retail article in a place, it might just as well occur in putting up prescriptions, and will look to a more reliable establishment for its prescriptions.

But in cases where life or health are endangered, the injured party may appeal to the protection of the law, which sometimes is followed by the ruin of the apothecary; he loses the confidence and patronage bestowed upon him; and I have had occasion to witness that establishments were sold far below their real value for a similar reason.

For the protection of the public against the careless sale of poisons, some of the States have made special laws regulating the sale of poisons. Poison books, in which every sale of poison is to be registered, are to be kept in drug stores. Every sale is to be witnessed by a person known to the druggist. The name of the poison, name and residence of the buyer, quantity and intended use of the poison, are to be properly specified in it. Omission of this rule, if any complaint is made, is subjected to a fine of \$50 in the first, and increased fines in repeated cases.

Nuremberg, Bavaria, June, 1869.

FORMULÆ FOR NEW PREPARATIONS.

(Selected from foreign journals.)

Collodium tannatum.—The hæmostatic effect of collodion is increased by the following preparation: Collodion 100, carbolic acid 10, tannin 5, benzoic acid 3 parts.—*Sweitzer. Wochenschr.*, 1869, No. 1, from *Giornale di farmacia*.

Indelible Ink.—Kuhr recommends the following as black and durable: The mordant is made of 1 hypophosphite of soda, 2 gum-arabic and 16 parts distilled water; the ink is composed of

1 part of nitrate of silver, 6 mucilage of gum, and 6 parts distilled water.—*Ibid.*, No. 2, from *Chem. Techn. Repert.*

Spiritus Formicarum.—Instead of distilling it from ants, the following formula is proposed in *N. Jahrb. f. Pharm.*: Acid. formic. conc. ℥ss , alcohol. dil. (sp. gr. $\cdot 90$) ℔. i. Hager's Manual directs: Acid. formic. (containing 25 per cent. anhydrous acid) 4 parts, æther. acet. p. $\frac{1}{2}$, alcohol., sp. gr. $\cdot 835$, alcohol., sp. gr. $\cdot 900$, each 8 parts.—*Ibid.*, No. 15.

Remedy for Carious Teeth.—Nitric ether and sulphate of alumina are mixed so as to form a paste, which is applied to the cavity. It never occasions any inconvenience, the most violent tooth-ache is promptly relieved, and, after several applications, the affected tooth becomes insensible.—*Ibid.*, No. 20, from *Jour. de Chim. Méd.*

Hydrated Silicate of Magnesia is prepared by precipitating a warm dilute solution of Epsom salt with a solution of soluble glass, entirely free from lead, until it ceases to produce a precipitate, which is washed and dried. It forms a soft, light, tasteless powder, which has been used with great success, by Dr. Garraud and others, as a substitute for bismuth in epidemic cholera diarrhœa. Dose, 5 to 10 grammes with gum-water.—*N. Jahrbuch f. Pharm.*, April, 1869, 224, from *Pharm. Centr. Halle*, 1869, 10.

Solution of Acetate of Alumina, which is considerably used in some parts of Germany as a gargle in sore throat, wash for wounds and for scorbutic gums, is, according to Hager, obtained free from lead by precipitating a solution of 80 parts sugar of lead in 240 water, by a solution of 50 parts ammonia alum and 10 sulphate of soda in 400 hot water; after setting aside for twenty-four hours in a cool place, (5 to 10° C.,) the liquid portion is passed through a filter. If a pure potassa alum is used, its quantity must be increased to about 53 parts. The preparation is best made in winter. It contains 3 per cent. $\text{Al}_2\text{O}_3, 3\text{Ac}$, and has, at $17\cdot 5^{\circ}$ C., a specific gravity = $1\cdot 021$ to $1\cdot 023$.—*Ibid.*, 235, from *Ibid.*, 2.

Iodated Milk contains iodine so intimately combined that it cannot be detected by the taste, smell, or color. It was first

recommended as a medicine by Duroy. Hager regards it as the mildest preparation of iodine, and states that about 5 parts of iodine, in this combination, must be given, to have the effect of 1 part of iodine in substance. He took milk containing .25 grammes iodine at one dose, without any unpleasant effects. The iodated milk may be preserved for over a week without spoiling; the cream separates, but is readily mixed by agitation. The following formula is proposed: Best cow's milk, 90 grammes, is warmed slightly in a glass or porcelain vessel; a solution of 1 grm. iodine in 10 grm. alcohol is then gradually added and mixed with agitation until the white color of milk reappears. A small dessert-spoonful contains about 5 centigram. iodine.—*Ibid.*, 235, 236, from *Ibid.*

Extractum Ergotæ, for subcutaneous injections, is, according to Langenbeck, made as follows: Extr. ergotæ, 2.5 p.; alcohol, 90 sp. gr., glycerin, of each, 7.5 p.—*Ibid.*, 234, from *Apoth. Zeitung*, 1869, 50.

ON TINCTURA OPII.

BY J. B. MOORE.

The directions of the U. S. P. for the preparation of this tincture are as follows:

“Macerate the opium with the water for three days, with frequent agitation; then add the alcohol and continue the maceration for three days longer. Introduce the mixture into a percolator, and, when the liquid has ceased to pass, pour diluted alcohol upon it until two pints of tincture are obtained.” To complete this process requires about a week, and to secure the full benefit of the maceration, it is essential that the directions to agitate frequently be complied with, especially as the opium is in powder, which is troublesome during so long a period, and which, unless in very careful hands, is likely to be partially if not entirely neglected.

I have for some time been in the habit of departing from the official directions in the preparation of this tincture, having

adopted a somewhat different process, the formula of which I give below for the benefit of those who wish to try it. I have always found it, when carefully worked, to thoroughly exhaust the opium and to yield an efficient and reliable product, equal, I think, in every respect to that of the U. S. P., and it possesses the merit of greatly abbreviating the time required for its fulfillment, which is important in all of the operations of the laboratory, especially when it can be accomplished without, in any particular, vitiating or impairing the quality of the product.

R Pulv. opii, No. 50, ʒiiss, troy.
Hot water, temp. 200°,
Alcohol, aa one pint.
Diluted alcohol, q. s.

Macerate the powdered opium in a covered vessel, with frequent stirring, until the mixture cools; then transfer it to a stoppered bottle and continue the maceration for twelve hours, with occasional agitation; then strain the infusion through muslin with strong expression. Macerate the residuum with the alcohol in a stoppered bottle for twelve hours, shaking frequently, then strain and express. Mix the infusions, and upon the dregs carefully packed in a small cylindrical glass percolator gradually pour the mixture, and when it has all passed from the surface, continue the percolation with diluted alcohol until two pints of tincture are obtained.

It will be found advantageous to rub the dregs through a sieve of about eighteen meshes to the inch, preparatory to packing in the percolator, as it reduces them to a good condition for packing.

Digestion at a temperature of 100 or 120° F. may be substituted for maceration if deemed advisable, although I have never found that necessary.

The advantages gained by the maceration of the opium in the 85 per cent. alcohol in the above process, is the solution and removal of the greater portion, if not all, of the caoutchouc-like substance and other principles which impede and render the percolation of opium so difficult and unsatisfactory. After the opium has been macerated in the alcohol and expressed, the dregs will be found

to be quite mobile, having lost that adhesiveness which they continue to retain after being treated with *diluted alcohol*.

To those who wish to use the lump opium, which I presume is the form in which the drug is most generally employed for making the tincture, I would recommend the following mode of treatment :

Cut the opium into small pieces, pour upon it, in a pan, the hot water, work and knead it well with the hands, until it is thoroughly disintegrated and softened, then macerate and express as directed in the formula above. Pour upon the residue the alcohol, and having worked it with the hands for a few minutes, transfer the mixture to a bottle and continue the maceration, and finish the process as directed above.

The outer portions of lump opium are usually dry and hard, which yield and soften with much difficulty, even when immersed for a considerable length of time in hot water. Therefore, in making the tincture, if after kneading the opium well with the hands there should still remain any hard and unbroken portions, the whole should be collected in the hand and expressed, then beat well in a mortar until all lumps are broken down and the mass becomes uniform.

Making the tincture from undried lump opium is of doubtful propriety, and by some may be considered an unwarrantable departure from the Pharmacopœia. But it is nevertheless done, and, as far as I can learn, I believe it is the usual practice of a great majority of apothecaries. Of course all conscientious pharmacists make due allowance, as nearly as they can approximate, for the moisture usually present in opium, which, however, is very variable, as the drug is found in the market. This plan, although it might be admissible without serious detriment, when the tincture is intended for the ordinary retail sales, but when designed for *prescription purposes* it could not be tolerated, for it is impossible, without drying, to ascertain precisely the amount of water contained in any sample of opium. The tincture would therefore be of uncertain strength, the uniformity of which is so essential in so potent, useful and important a preparation as this.

PHILADELPHIA, August, 1869.

PEROXIDE OF HYDROGEN, THE NEW REMEDY FOR DIABETES.

BY C. GILBERT WHEELER, PH. D.

Within the last few months several notices have appeared in the medical journals of Europe, and the eastern portion of our own country, with regard to the employment of peroxide of hydrogen in the treatment of diabetic patients. Remarkable success seems to have accompanied its use to such an extent as to awaken a very considerable interest among medical men with regard to this hitherto little known compound. At the recent annual meeting in this city of the State Medical Association, this remedy was brought to the notice of that body by Dr. N. S. Davis, in the able report of the committee on drugs and medicines. This report will be found in the *Chicago Medical Examiner* for the present month.

The circumstance then of its coming before the public, as thus stated, and likely soon to be an article not unfrequently prescribed, makes it appropriate that the nature and properties of the substance should be more generally and fully known, especially as our ordinary text-books on chemistry and pharmacy contain very little with regard to it. Although peroxide of hydrogen has not been studied by chemists as fully as many other compounds, yet much is to be met with in chemical journals, especially those of Germany and France, which has not as yet found its way into American scientific literature.

Peroxide of hydrogen, binoxide or deutoxide of hydrogen, hydric peroxide and oxygenated water, are synonyms for a compound of two atoms of hydrogen with two of oxygen, or of two parts by weight of the former with thirty-two of the latter, and having the formula, $H_2 O_2$; water being $H_2 O$, or the formula $H O_2$ according to the antiquated dualistic nomenclature. It was discovered in 1818 by Thenard, an eminent French chemist.* Has never been prepared direct from its elements, nor obtained perfectly pure, but always in an aqueous solution, the most concentrated having a specific gravity of 1.452. According to Schoenbein, it results from various chemical reactions, but soon spontaneously decomposes. It is formed when the peroxides of

* Annual de Chimie et Phys. [2] vol. viii, p. 306.

barium, strontium, calcium, potassium or sodium are decomposed with acids. It forms during the electrolysis of water acidulated with sulphuric acid, also in many instances where slow oxidation is in progress, and under conditions such as give rise at the same time to the formation of ozone, as for instance during the oxidation of phosphorus in moist air.

Schoenbein believes that in this case the oxygen of the air is transformed into ozone and antozone, its electrical opposite, and this latter then combines with the water present to form peroxide of hydrogen. In the familiar method of exhibiting the formation of ozone by heating platinum in a vessel of air containing also a small quantity of water and ether, there is formed an appreciable quantity of peroxide of hydrogen along with ozone. Some chemists believe that in all cases where oxidation takes place in moist air, more or less peroxide of hydrogen is formed, as in the rusting of metals, the decay of organic substances, or the respiration of animals,* and that in these processes it plays an important part.

Notwithstanding the many possible methods of forming the peroxide, only those are practically useful based upon the decomposition of barium peroxide by means of an acid in presence of water.

In the original method of Thenard, hydrochloric acid was employed. But the purification and concentration is by his method very difficult and circumstantial. Pelouze employed hydrofluoric acid, also hydrofluosilic acid. But by far the most satisfactory method is that of Balard, as modified by Duprey.† A very rapid current of pure carbonic acid is passed through distilled water, and peroxide of barium added in small quantities, care being taken to have the acid always in excess. After filtration the solution is concentrated under the receiver of an air pump. A very dilute solution of the peroxide may also be obtained in the following manner, which for experimental purpose is an excellent method, and admits of execution sufficiently rapid to be suited for the lecture table: a small amount of the peroxide of potassium is prepared by melting the metal in a test tube, and

* See interesting article on, in Erdman's Journal, vol. 89, p. 323.

† Compt. Rendus, i, 55, p. 736.

passing for a few minutes a current of oxygen through the same the peroxide is then added, in small quantities, to an aqueous solution of tartaric acid, and the filtrate will be found to contain a sufficient quantity of the peroxide of hydrogen for the usual tests.

Peroxide of hydrogen, when in the most concentrated aqueous solution, is a colorless, transparent liquid; it has never yet been frozen, and is less volatile than water. Concentrated solutions are strongly bleaching in their action on coloring matters, have a bitter taste, act on the skin, causing it to become white and give rise to itching sensation. Such solutions rapidly decompose, especially on heating. Dilute solutions will keep for months at ordinary temperature. The peroxide is slightly soluble in ether, and this solution is the remedy recently brought before the public as "ozonic ether," and is used in similar cases as the aqueous solution, and in doses of from 10 to 30 minims three to four times a day in water.

Peroxide of hydrogen is an active oxydising body, and doubtless its efficiency in diabetes depends on this circumstance. Dr. Richardson proposes to use it as a substitute for iodine and mercury in constitutional forms of scrofula and syphilis. The strength of the solution is such that the peroxide on decomposition should yield a volume of oxygen ten times as great as the volume of the solvent.

There are numerous good tests for the peroxide. Two of the most delicate are the following: I. To a freshly prepared starch solution add iodide of potassium, then the peroxide, and finally a solution of sulphate of iron; a blue color at once appears. II. A slightly acid solution of permanganate of potassa is at once decolorized.

This latter test may serve as the basis of a quantitative test, by using a solution of the permanganate of known strength, and thus the practical pharmacist has a means at hand of readily testing the relative strength of his solution of the peroxide from week to week, with a view of establishing the proper dose. This, for an aqueous solution of the strength above given, is one to four fluidrachms repeated three times a day.

CHICAGO, July, 1869.

—*The Pharmacist, Chicago, July, 1869.*

FILTRATION UNDER PRESSURE.

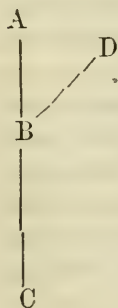
BY GUSTAVUS HINRICHS.

Professor R. Bunsen, of Heidelberg, has recently devised a very excellent improvement in the tedious but all important operation of filtration. This new method may easily be applied whenever a supply of water and a good fall of from 10 to 30 feet are at disposal. In all towns with water works and drains it is easy to put this method into practice; the saving of time is enormous, for Bunsen finished a washing of chromium hydrate in 13 minutes, while, according to the old process, 7 hours were required, representing a saving of 97 per cent. of time. This method will evidently be of great use to the pharmacist.

Bunsen proved that the rapidity of filtration is very nearly proportional to the pressure under which it is effected. In the old way, when filtration is performed in the atmosphere, the pressure is but very small. The new method consists in receiving the filtrate in a partial vacuum, so that filtration takes place under a pressure more or less nearly equal to that of the atmosphere—30 to 34 feet, instead of a few inches of water.

For this purpose two things are necessary, a strengthening of the filterer and the production of a vacuum.

For the latter purpose air pumps are applicable; the vapor of water, and especially the corrosive vapors of acid, would soon deteriorate the machine. The vacuum is easiest produced by means of a stream of water flowing down a vertical tube ABC, which latter is connected with the receiver by a tube BD, which, at an acute angle, enters the main tube ABC. If the tube BC be passed through one or two stories and connected below with a drain, a very effective filtration under pressure will be possible. Even a fall of 8 feet is already quite effective.



The receiver D consists of a strong glass vessel to receive the filtrate, closed air tight by means of a good stopper (best of rubber) through which the funnel and a glass tube pass, likewise air tight. The glass tube is connected with the tube DB by means of a stout rubber tube. In the very accurate funnel is a circular

and *very thin* piece of platinum foil, slit up along one of its radii, and folded exactly like a smooth filter; this platinum foil filter serves to enable the paper filter to sustain the pressure, but does not hinder the filtration. The circular plate of platinum is from 2 to 3 centimetres (1 to $1\frac{1}{2}$ inches) in diameter.

The operation of this apparatus will now readily be understood. As soon as the water falls down the tube ABC, air is borne along between the drops (as in the old catalonian bellows). If the apparatus is tight, the air can only come from the receiver, which therefore rapidly will be evacuated, so that the pressure of the atmosphere being no longer balanced from inside of the receiver, will force the liquid rapidly through the filter.—*The Pharmacist, Chicago, July, 1869.*

ECOLE PRATIQUE DES HAUTES ETUDES, PARIS.

The new school and the laboratories at the Sorbonne, which have been fully described in the *Journal of the Society of Arts*, were expected to be opened in the course of January. M. Milne-Edwards, Dean of the Faculty of Sciences, has recently made a report to the Academic Council of Paris upon the progress, with one important change, made in the arrangements for the new high school and laboratories. The faculty already is in possession of two physical laboratories, one for instruction under Professor Desains, in which candidates for the degrees of Licentiate or Doctor may learn the management of instruments of precision, and exercise their faculties in the repetition of classical experiments relative to heat, light, electricity, magnetism, and acoustics. The rooms set apart for this purpose have been found in three old houses, close to the Sorbonne, and placed temporarily at the disposition of the faculty, and they will very shortly be opened four times a week to the pupils. The second physical laboratory is for scientific investigation, and is installed in a new building erected by the municipal authorities expressly for the purpose; this is under the direction of Professor Jamin, and was opened in the middle of last summer. The large chemical laboratory, under the direction of M. Sainte-Claire Deville, assisted by M. Schulzenberger, was to be opened early in

the present year. The practical study of mineralogy is to be carried on in the study of M. Delafosse, once a week at first, but afterwards twice if necessary. There are provided two geological laboratories, both under the charge of Professor Hebert, and to be opened twice a week. The study of botany is to be divided between the Sorbonne and the Museum of Natural History at the Jardin des Plantes; the laboratory of the faculty, directed by Professor Duchartre, to be devoted to dissection, microscopic examination and analysis. A new arrangement has been made with respect to the study of comparative anatomy, which will be divided between the Jardin des Plantes, the College de France, and the Sorbonne, the dissection of animals being studied at the first of these establishments. With respect to experimental physiology, a laboratory is now being arranged by M. Claude Bernard, but on a scale much too small for the purpose, but which will doubtless soon be enlarged. Lastly, says M. Edwards, the faculty intends to complete its arrangements by the opening of a reading room, in which the students of the new high school may consult the various scientific periodicals, and make use of the time that will necessarily elapse between the lessons; for this useful object the professors have given up their common room until a new one can be provided. It is quite evident that the Minister of Education and the learned Dean of the Faculty are determined to carry out the intentions of the government with vigor, and it would be the fault of the young men themselves who are devoted to scientific pursuits if they do not make progress, not only in educational, but in original investigation. The professors are the most celebrated in France, and means provided are such as no university in the world offers for high scientific study. It will be strange indeed if a field so well prepared, and in such good hands, should fail to be fruitful.—*The Druggist, London, April 10, 1869, from Chem. News.*

ACTION OF CARBOLIC ACID ON REPTILES.

We have been favored with extracts from an account of some very valuable experiments made by J. Fayrer, F.R.S.E., C.S.I.,

&c., on the value of carbolic acid in preventing the entry of serpents into dwellings, from which we find that a few drops of the acid are sufficient to quickly kill full-grown cobras and other poisonous snakes. Dr. Fayrer is continuing his experiments on the merits of carbolic acid as a therapeutic agent in snake bite, and, in the meantime, he suggests its use as a preventive against the entry of snakes into houses, &c. Dr. Calvert informs us that it is probable that the acid will save life by applying it, in a caustic state, to the wound caused by the bite of a serpent, and more satisfactory results will be obtained by following the method first put into practice by Dr. Tessier in the Mauritius, for the cure of a virulent intermittent fever. In this case, by injecting under the skin a solution of three-quarters of a grain of carbolic acid dissolved in 20 minims of water, the patients were rapidly cured, and the spread of the pestilence arrested.—*Lond. Chem. News, July 30, 1869.*

ON A NEW PREPARATION OF LUPULIN.

By DYCE DUCKWORTH, M.D.

Medical Tutor, St. Bartholomew's Hospital.

The author, after alluding to the general use made of Lupulin in the United States, and its neglect in Great Britain, says:

The preparations in the United States codex are arranged with due regard to this point, and in recommending these to more careful notice in England, I should have little or nothing to add, were it not that I believe I have observed the fact that the aromatic spirit of ammonia is a better solvent of this substance than any other yet proposed. The American tincture and fluid extract are prepared with rectified spirit, and the oleo-resin, as in the case of *Filix-mas*, is procured by means of æther. The two former turn milky on the addition of water, and, what is more noteworthy, cast off the resin they hold in solution, which appears as a film on the surface of the mixture. This resin I find cannot be taken up again by adding excess of alkalies, such as liquor potassæ, bicarbonate of soda, or aromatic spirit of ammonia. If, however, either of these preparations be put into a dry vessel, and about an equal bulk of spiritus ammoniæ aro-

maticæ is mixed with it, and water subsequently be added, a good solution is formed, pleasant-looking, though not quite clear. I have devised another preparation which, I think will prove most useful whenever it is desired to use the hop. It is an ammoniated tincture, and should be made in the same way as the other ammoniated tinctures of the Pharmacopœia. Like valerian, which also contains an oil and a resin, lupulin is best exhausted by the aromatic spirit of ammonia, and the reason for this appears to be that this preparation contains the combination of alkali and rectified spirit necessary to the solution of the various elements in these drugs. Certainly no agent that I have tried extracts the virtues of lupulin so well as sal-volatile. The result is a strong richly-colored tincture. Neither rectified spirit, æther, nor, of course, proof spirit produce so strong a preparation.* I recommend the following formula:—Lupulin, 2 oz., spir. ammon. arom., a pint: macerate for seven days, agitating occasionally, then filter and add sufficient menstruum to make up to a pint.† The dose of this is from ℥ 20 to fl. ʒj. I propose to call it “tinctura lupulinæ ammoniata.”

I have no hesitation in directing attention to this preparation of the hop as the best we at present possess. According to Christison, the dose of tinctura lupuli should be fl. ʒj. to fl. ʒiiss to produce any hypnotic effect; the ordinary dose consists of as many drachms. Dr. Ives, of New York, states that the tincture of lupulin is an effectual hypnotic in restlessness, the result of nervous irritability, and in delirium tremens.‡ Some advantage too, is derived from the presence of ammonia in considerable quantity, and this whether the preparation be exhibited as a hypnotic, or as a tonic combination of bitter and ammonia.—*Pharm. Journ., London, Oct., 1868.*

* According to Royle, the active properties of lupulin are completely extracted by spirit. I am inclined to doubt this. He recommends a tincture of it, however, in preference to tinct. lupuli.

† A specimen of it was exhibited in the Annual Museum of the British Medical Association at Oxford, in August last. Mr. Hall, of Wigmore Street, who made this for me, recommends that percolation should not be employed.

‡ *Vide* American Codex, also Nevins' Transl. of Lond. Pharm. 1851.

GLEANINGS FROM GERMAN JOURNALS.

BY JOHN M. MAISCH.

Copalchi Bark.—Dr. F. Mauch, Jr., found copalchi bark of commerce to be mixed with not less than 20 per cent. of other barks, mainly cinchonas (*China Tecamez* and *China Nova Surinamensis*). The carefully picked bark contained of important proximate principles 4.15 per cent. resin soluble in ether, 3.27 resin soluble in alcohol, 1.52 to 2 per cent. copalchin, a neutral bitter principle, .15 volatile oil, 3.5 protein compound and oxalic acid. The alkaloid of J. Howard could not be found, and is referred by the author to the admixture of cinchona, as stated before.—*Wittstein's Viertelj. Schr.*, 1869, 161—174.

Cupido Bark of Venezuela.—Dr. F. Mauch, Jr., met with a bark under this name, which, by comparing it with the barks from Chili at the Paris Exposition, he pronounced identical with the bark of *Drimys chilensis*, De C. The author obtained 5.3 per cent. soft acid resin, .42 volatile oil, composition $C_{20}H_{16}$, .61 tannin turning iron salts green, 4.32 phlobaphen (red product of decomposition of the tannin), 6.2 per cent. protein compound and starch, citric and oxalic acids.—*Ibid.*, 174—183.

Mercurialina.—E. Reichardt has again investigated the volatile alkaloid obtained by him in 1863 from *Mercurialis annua* and *perennis*. Its formula, C_2H_5N , is identical with methylamina, but some of its properties, and particularly the behaviour of several salts, are sufficiently distinct from methylamina to entitle the former, for the present, to a distinct name.—*Ibid.*, 222—230.

Sinapism.—Wittstein manipulates as follows to obtain the sinapism recommended in 1868 by Lebaigue: one part yellow mustard, from which the fixed oil has been expressed, is digested in four parts of water for two hours at a temperature not exceeding $40^\circ C.$, thrown upon a filter, and washed with four parts of water; printing paper is steeped in the filtrate, dried at ordinary temperature, marked with A, myrosin, and preserved in a dry place.

One part black mustard, freed from the fixed oil by pressure, is added in small quantities to four parts boiling water, the boil-

ing is continued for a few minutes, the mass diluted with four parts water, and filtered; the filtrate is used for saturating printing paper. This is dried and preserved as before, and marked B, myronic acid.

To prepare a sinapism, equal-sized pieces are cut from A and B, one laid upon the other, moistened with water, and fastened upon the skin with a bandage.—*Ibid.*, 238—241.

Pyrolusite as a test for the color of Claret.—A. Facen (*Journ. de Méd. de Brux.* 1868, Aout) states that black oxide of manganese removes from claret the natural red color, and this test has been recommended as reliable by a commission of experts. Wittstein corroborates the fact that the natural color of red wine is removed thereby, but found that the color imparted to wine by hollyhock is affected in precisely the same way, and since these flowers are largely used in the manufacture of claret, the test is unreliable.—*Ibid.*, 241, 242.

Glycerin as an application to burns is recommended by J. Fuchs. Through the explosion of a spirit lamp the greater portion of his face had been covered with rather deep burns, which healed in a week by the immediate and oft-repeated application of glycerin, without producing blisters or festering, or leaving any scar.—*Schweiz. Wochenschr.* 1869, No. 6, from *Bresl. Gewerbebl.*

Paraffin in Wax.—Hager has met with a wax adulterated with its own weight of paraffin. To estimate its quantity, two grammes of the suspected wax are fused, then boiled for a few minutes with a solution of 1.5 potassa in 4 or 5 water, and agitated until homogeneous and almost congealed. Six to eight grammes petroleum ether (so-called benzine) are carefully added, the whole well shaken, an excess of aqueous solution of sugar of lead is added with constant agitation, when the mixture is set aside. The petroleum solution is separated, the residue repeatedly washed with the same liquid, and the decanted liquid evaporated. Pure yellow wax leaves a residue of 15 per cent.; any excess is due to paraffin.—*Ibid.*, No. 15, from *Pharm. Cent. Halle.*

Podophyllin, according to some French journals, is prepared by boiling the rhizome with milk of lime, adding to the filtrate a

solution of sulphate of iron and zinc, to precipitate the lime, and evaporating the filtrate to the consistence of an extract, which is exhausted by alcohol; the alcoholic solution is concentrated, and the residue taken up by boiling water, which on cooling deposits the podophyllin.—*Ibid.*, No. 20.

Abietit is the name given to a sweet principle by F. Rochleder, which he discovered in the leaves of *Abies pectinata*; it resembles mannit in appearance, but differs from it considerably in its solubility and composition, which is $C_{12}H_8O_6$.—*Archiv der Pharm.*, 1869, Juni, 263, from *Akad. z. Wien*, 1868, 57.

Horse-chestnut leaves, according to Rochleder, contain a tannin which is also found in tormentilla root; in the former it is converted into æscigenin, $C_{24}H_{20}O_4$, in the latter into kinovic acid, $C_{43}H_{33}O_8$.—*Chem. Centralbl.* 1869, 241—243, from *Ber. d. Wiener. Akad.* lvii, 604.

Isophloridzin.—The leaves of the apple tree contain isophloridzin, according to Rochleder, which is isomeric with the phloridzin of the bark of the root and trunk. By dilute acids it yields isophloretin, of the same composition as phloretin, but readily soluble in ether. Phloridzin belongs to the salicylic, isophloridzin to the benzoic series, and this transformation appears to be a function of the leaves, as the first step towards forming the amygdalin in the seeds.—*Ibid.*, 244, from *Ibid.*, 779.

Nitric Ether.—While experimenting on the products of reduction of this ether by tin and muriatic acid, W. Lossen found the following process yielding good results. One litre nitric acid, sp. gr. 1.4, is heated to boiling with 15 grm. nitrate of urea. After cooling, for every 400 grm. of the acid 300 grm. absolute alcohol and 100 grm. nitrate of urea are added, one-half of the mixture is distilled off, and then a similar mixture of acid and alcohol is introduced through the tubulure, to compensate for that which is distilling off. In this way several pounds of nitric ether may be obtained in a day; 100 grm. nitrate of urea are sufficient for 12 to 15 lbs. ether, when it must be replaced by a fresh portion.—*Ibid.*, 348, from *Zeitschr. f. Chem.*, N. F. iv, 403.

To distinguish gum senaar from gum arabic, which latter is

frequently adulterated with it, Dr. Schlosser recommends the following process: 3 grammes of the gum are dissolved in 15 grms. cold distilled water, to the solution 30 grms. of Goulard's extract, Ph. Austr. 1853,* are added, and filtered through a small filter. Pure gum arabic yields in about an hour a scarcely opalescent filtrate weighing 18 to 20 grm., and the residue is not fluid. Senaar gum yields very slowly (in twenty-four hours) a milky filtrate, and the residue upon the filter, after 20 grm. have passed, is still liquid; a second filtration renders the filtrate clear.

6 grm. of the filtrate are diluted with 5 grm. water, and then mixed with $1\frac{1}{2}$ grm. ammonia, sp. gr. .960. With pure gum arabic an almost clear liquid is obtained, which in twenty-four hours deposits a slight precipitate; senaar gum, however, produces a stiff white gelatinous mass, and gum arabic adulterated with dextrin behaves in this respect similar to senaar gum; this appears to come from a different source. Gum Senegal behaves exactly like gum arabic.—*Zeitschr. d. Oester. Apoth. Ver.* 1869, 209, 210.

The soluble saccharated Oxide of Iron as an antidote to Arsenic has been experimented with upon animals by Dr. H. Köehler, of Halle. He regards it as a useful antidote, and recommends not to use albumen nor saline purgatives with the iron, but afterwards remove the neutralized arsenic by emetics.—*N. Jahrb. f. Pharm.* 1869, Marz, 129—150.

Preparation of pure muriatic acid.—P. W. Hofmann, (Ber. d. Chem. Gesellsch. zu Berlin, i, No. 21,) found that when to crude muriatic acid, contained in a suitable vessel, sulphuric acid sp. gr. 1.848 is added, muriatic acid gas is at once evolved, which may be washed and absorbed by distilled water. The evolution of gas is very regular, accompanied by little heat, and ceases only when the sulphuric acid is reduced to sp. gr. 1.566. It contains then only 0.32 per cent. HCl, and no further loss is sustained besides the dilution of the sulphuric acid.—*Buchner's N. Repert.* 117, 118, from *Ber. d. chem. Ges. zu Berlin I, No. 21.*

* This being made of 2 sugar of lead, 1 litharge, and 8 water, is about half the strength of that officinal in U. S. P.

Conchinin is the name given by O. Hesse to a cinchona alkaloid, which he states has already received the various names, pitayin, chinidin, β chinidin, β chinin, B chinin, crystallized chinoidin and cinchotin. It turns polarized light to the right, like cinchonia, is isomeric with quinia, is precipitated from its neutral solutions by iodide of potassium, and yields with chlorine and ammonia the same green coloration as quinia. The base is evidently the same which by Pasteur was named quinidia.

Hesse states that at 15°C . it dissolves in 2000 water, at 10°C . in 35, and at 20°C . in 22 p. ether, and at 20°C . in 26 p. 80 per cent. alcohol; the alkaloid crystallizes readily from its solutions. The sulphate has the formula $2\text{C}_{40}\text{H}_{24}\text{N}_2\text{O}_4, \text{S}_2\text{H}_2\text{O}_8 + 4\text{HO}$, and dissolves in 108 p. water of 10°C . The neutral hydriodate requires 1270 p. water at 10°C . for solution. Its soluble salts are precipitated by ferrocyanide of potassium as a yellowish crystalline powder, while, if previously heated, golden-yellow prisms are obtained; this behaviour is identical with that of cinchonia, which Bill thought could be distinguished by this test.

From a neutral solution of the four cinchona alkaloids, dilute solution of Rochelle salt precipitates those deviating polarized light to the left, (quinia and Pasteur's cinchonidia = chinidin of the German chemists), while those deviating to the right remain in solution (cinchonia and Pasteur's quinidia = Hesse's conchinin).—(*Ann. d. Ch. u. Pharm.* cxlvi, 357–370.)

Small weights.—H. Reinsch suggests, to weigh accurately a piece of aluminum wire, to draw a line of precisely the same length upon paper, divide it into the requisite parts in the well-known way and cut the wire after marking the divisions upon it; each piece may then be bent to the shape of the figure it represents, thus V for 5, &c.—*N. Jahrbuch f. Pharm.* 1869, 18.

Tests for minute quantities of Hydrocyanic Acid.—Schoenbein (*Schweiz. Wochenschr. f. Pharm.*) moistens filtering paper with fresh tincture of guaiacum, containing three or four parts resin, and, after drying, with a solution containing one-quarter per cent. of sulphate of copper. This paper is instantly rendered blue in the atmosphere of a 20-litre vessel containing one drop of dilute hydrocyanic acid of one per cent.

Iodinized starch paper (1 KI, 10 starch and 200 water) moistened with the above solution of copper and suspended in a 10-litre vessel containing one or two drops of the above hydrocyanic acid, turns red; the color disappears again after some time, in consequence of the formation of iodide of cyanogen and hydriodic acid; this reaction indicates 1HCy in 2,000,000 solution.—*Ibid.* 67-69.

ON SOME MEANS FOR PREVENTING THE BUMPING OF BOILING LIQUIDS.

BY HUGO MÜLLER, F. R. S.

The annoyance which arises from the bumping of certain liquids when submitted to distillation or boiling has often attracted the attention of chemists, and various means have been proposed for its prevention.

The value of pieces of platinum, charcoal, burnt clay, and other porous bodies for this purpose is well known, and under certain circumstances are efficient enough; yet there occur very frequently cases in the laboratory when these means are unavailable.

About two years ago Pietro Pellogio (*Fresenius Zeitschr.*, vi, Jahrg.) proposed a very simple contrivance, which was stated to act very satisfactorily indeed. It consisted of a moderately wide glass tube, passing through the cork of the tubular of the retort, and nearly reaching the bottom of it, the upper end being bent at right angles and drawn out into a capillary tube.

Having occasion to try the efficiency of this arrangement, I came to the conclusion that it was quite ineffective, and shortly after G. Hager (*Pharmac. Central-halle*, Bd. 9) confirmed the negative results I obtained.

Quite recently E. Winkelhofer (*Ber. d. Chem. Gesellsch. Berlin*, p. 194, 1869) proposed for the same purpose the application of an electric current, which, through the incipient decomposition of the liquid and consequent evolution of gas, causes the ebullition to become quite regular and steady. Dufour, for another, with another object in view, had made use of the same means.

The application of the electric current unfortunately presup-

poses that the liquid to be distilled is a sufficiently good conductor of electricity, and if this is not the case necessitates the introduction of such substances as shall cause the liquid to become a conductor. This circumstance, therefore, limits very considerably the use of this otherwise efficient arrangement, and it is on this account that I venture to bring under notice some other means which I have tested in a variety of cases, and which invariably proved satisfactory.

In cases where the introduction of any foreign matter into the liquid about to be distilled is undesirable, I introduce through the cork in the tubular of the retort a glass tube, which is drawn out to a long capillary tube and pressed tightly to the bottom of the retort. The upper end of the glass tube is connected, by means of an india-rubber tube, with a generator of carbonic acid, or hydrogen, or a gas-holder containing air, and whilst the distillation is going on one of these gases is passed in a slow but continuous current through the liquid. Under these conditions, all bumping is avoided, and the distillation proceeds with the utmost facility.

For ordinary purposes, however, I have found it still more convenient to introduce into the liquid about to be distilled a small fragment of sodium amalgam or, in cases where the liquid is acid, a small piece of sodium tin. Methylic alcohol is well known to be one of the most difficult liquids to distil, yet, on the introduction of a minute piece of sodium amalgam or sodium tin, it can be distilled without the slightest inconvenience. I found on one occasion that more than 400 grammes of methylic alcohol distilled over with perfect steadiness, and without exhausting the activity of a fragment of sodium tin, weighing not more than 0.060 grms.

It is, perhaps, hardly necessary to mention that the action of sodium amalgam and sodium tin is due to a minute but continuous disengagement of hydrogen taking place during the process of distillation.—*Chem. News, Lond. July 30, 1869.*

FUSIBILITY AND VOLATILITY OF METALS.

While engaged with experiments on the intrinsic composition

and constitution of various pieces of silver money, made at the Royal Netherlands Mint, at Utrecht, Dr. A. von Riemsdyk carried on some experiments on the fusibility and volatility of metals, from the published record of which we abstract the following: The metals tin, bismuth, cadmium, lead, and zinc, as chemically pure as they can be obtained, were molten, in order to prevent their oxidation, in a feeble, but constant, current of pure and dry hydrogen gas. The author found that—(1) the melting of these metals does not, either mechanically or by evaporation, give rise to any loss at all; (2) that *tin*, *lead*, and *bismuth*, when kept in a liquid state, are not volatile at temperatures greatly in excess of their melting points, and that, at a bright red heat, quantities of 2·3433 grms. of *bismuth*, and 4·5183 grms. of *lead*, did not lose, by being kept at that temperature for one hour, more than 1 and 0·5 m.m., respectively, by evaporation, while *tin* did not exhibit any volatility at all; (3) that *cadmium* and *zinc*, though completely fixed, non-volatile, at their melting point, begin perceptibly to volatilise at a few degrees above that point; (4) that there does not exist any relation at all between the fusibility and volatility of these metals, which may be arranged in the following manner, beginning from the most fusible and most readily volatile:

	Fusibility.	Volatility.
Tin,	. . . 228·5° C.	Cadmium.
Bismuth,	. . . 268·3° “	Zinc.
Cadmium,	. . . 320·0° “	Bismuth.
Lead,	. . . 326·0° “	Lead.
Zinc,	. . . 420·0° “	Tin.

(5) that the so-called Rose's fusible metal, an alloy of tin, lead and bismuth, the melting point of which is about 97·5°, and certainly not higher, is not perceptibly volatile when heated to a bright red heat in a current of pure hydrogen gas. Silver, unalloyed, melts at 1040° C., pure gold at 1240° C., while the author found that chemically-pure copper requires a temperature of 1330° C. to become liquid. Neither pure silver, nor pure copper, nor also the alloy of silver and copper containing 945-1000ths of the former metal (this alloy is the standard alloy of the Netherlands silver coins), loses anything at all by volatilisa-

tion when kept for a considerable time at temperatures higher than the melting points of both these metals, and in a feeble current of pure hydrogen to prevent their oxidation. The author has made some of these experiments on a very large scale, having at his disposal large quantities—several hundred kilos.—of these metals in pure and alloyed state ; he also describes an ingenious pyrometer devised and invented by him, but space forbids us to enter into further details.—*Chemical News, London, July 16, 1869.*

ON THE REDUCTION OF TEMPERATURE BY THE SOLUTION OF SALTS.

BY FR. RUDORFF.

The reduction of temperature which takes place on dissolving salts must be the greater the more of this salt is dissolved in the water ; and the maximum of the reduction must be reached if salts and water are brought together in such a proportion that at the temperature aimed at a saturated solution is obtained ; any excess of water or salt will serve only to prevent the solution from reaching the maximum of reduction, since the excess has to be cooled down likewise. This had not been taken into consideration by former experimenters, and hence the difference of their results.

To avoid the influence of the surrounding atmosphere, the solution must be effected as quick as possible, which is done by using the salt in fine powder, and in slight excess over the quantity actually necessary, and by stirring the mixture.

In making the experiments the finely powdered salt and the requisite quantity of water, each contained in thin beaker glasses, were kept from 12 to 18 hours in a room of uniform temperature, so that both had exactly the temperature of the room ; the water was then added to the salt and the mixture stirred with a good thermometer ; the greatest reduction took place within one minute. The results in the following table are the mean of several experiments, which never differed more than $\cdot 2^{\circ}$ C. from each other :

Salts.	Soluble in 100 water.	Quantity mixed with 100 water.	The temperature falls		
			from	to	Difference.
Alum, cryst.....	10	14	+10.8°	+ 9.4°	1.4° C.
Chloride of sodium.....	35.8	36	12.6	+10.1	2.5
Sulphate of potassa.....	9.9	12	14.7	+11.4	3.0
Phosph. soda, cryst.....	9.0	14	10.8	+ 7.1	3.7
Sulphate ammonia.....	72.3	75	13.2	+ 6.8	6.4
Sulphate soda, cryst.....	16.8	20	12.5	+ 5.7	6.8
Sulphate magnesia, cryst....	80.	85	11.1	+ 3.1	8.0
Carbon. soda, cryst.....	30.	40	10.7	+ 1.6	9.1
Nitrate potassa.....	15.5	16	13.2	+ 3.0	10.2
Chloride potassium	23.6	30	13.2	+ 0.6	12.6
Carbon. ammonia.....	25.	30	15.3	+ 3.2	12.1
Acetate soda, cryst.....	80.	85	10.7	— 4.7	15.4
Chloride ammonium.....	28.2	30	13.3	— 5.1	18.4
Nitrate soda.....	69.	75	13.2	— 5.3	18.5
Hyposulphite soda, cryst....	98.	110	10.7	— 8.0	18.7
Iodide potassium.....	120.	140	10.8	—11.7	22.5
Chloride calcium, cryst.....	200.	250	10.8	—12.4	23.2
Nitrate ammonia.....	55.	60	13.6	—13.6	27.2
Sulphocyanide ammonium..	105.	133	13.2	—18.0	31.2
Sulphocyanide potassium...	130.	150	10.8	—23.7	34.5

The absolute quantities used were between 250 and 500 grm. water and the requisite amount of salt. With smaller quantities than about 200 grm. water the absorption of the vessel exerts a marked influence, and experiments have also proved that an increase of the salts over the proportions given above has a similar influence.

A higher temperature at the beginning will produce a different result with those salts, the solubility of which is considerably increased by a rise of temperature. On dissolving the necessary quantity of saltpetre in water of 23.0° C. the temperature fell to 10.2, a difference of 12.8° against 10.2°, at 13.2°. In describing the results it is necessary to give the temperature at the beginning and end of the experiment, and not merely the difference.

A reduction of temperature *below* the freezing point of the resp. solution cannot be obtained, but this point may be reached. The temperature of water of 0° C. on mixing with the requisite amount of saltpetre fell to —2.7°, crystallized soda to —2.0°,

nitrate of ammonia to -16.7° C. The freezing points of these solutions are -2.8° , -2.0 and -16.7° , respectively.

If 500 grm. of sulphocyanide of potassium is dissolved in 400 c.c. water by stirring with a test tube half filled with water, this will freeze in two or three minutes. This salt is probably best adapted to the manufacture of ice.

The solubilities in the above table are taken from Mulder's statements. With the two sulphocyanides the author experimented, and found in 100 parts of water the potassium salt soluble as follows: at 0° 177.2 p., at 20° 217.0 p., and the ammonium salt at 0° 122.1 p., at 20° 162.2 parts.—*N. Jahrb. J. Pharm.* 1869, April, 222—224, from *Ber. d. d. chem. Gesellsch.* ii, 68.

ON PIPERINIC ACID.

By RUD. FITTIG, and W. H. MIELCK.

The acid was prepared by heating piperina with alcoholic solution of potassa. The recrystallized acid fuses at 216 to 217° C. afterwards constantly at 212 to 213° ; v. Babo and Keller gave the fusing point at 150° . At a somewhat higher heat the acid partly decomposes and sublimes in fine yellow needles. Heated with pure water to 235 or 245° C. it is completely decomposed into carbonic acid and a mixture of acid resinous bodies. Apparently the same decomposition is effected by very dilute muriatic acid at 160° , and by concentrated muriatic acid at 100° . By heating with lime, it yields charcoal, carbonic acid, water and a trace of oil resembling phenol. Piperinate of potassa heated with iodide of ethyl, potassa and alcohol, yields piperinic ether. Chromic acid oxidizes piperinic acid completely to carbonic acid and water. With dilute nitric acid, oxalic acid and a red amorphous body are formed.

Permanganate of potassa oxidizes the piperinates, the solution acquires an agreeable odor of coumarin, and yields by distillation a beautifully crystallizing body, piperonal = $C_8H_2O_3$; oxalic and carbonic acids and water are formed at the same time. Piperonal crystallizes from water in long lustrous colorless transparent prisms, is very soluble in ether and boiling alcohol, fuses at 37° C., boils at 263° and has a very agreeable

odor, resembling coumarin ; it has the character of an aldehyde, and yields with sodium amalgam, among other products two crystallizable alcohols.

The authors have also studied the effect of bromine upon the acid and by oxidizing pipèronal with permanganate of potassa, a new acid, piperonylic acid = $C_8H_3O_4$ was obtained.

The experiments are insufficient to determine the constitution of piperinic acid.—*Zeitschr. f. Chemie*, 1869, 326-332.

ACTION OF BOILING LIQUIDS CONTAINING ACIDS AND ALKALIES UPON GLASS AND PORCELAIN VESSELS.

BY DR. A. EMMERLING.

This essay, or rather monograph, contains the record of a series of most minutely executed experiments, whereby to determine the influence of various fluids, containing acids, salts, and alkalies, upon vessels made of different qualities of glass and porcelain, in order to determine the amount of substance dissolved by such chemicals, and also by pure distilled water, and to ascertain what influence is thus exercised upon the accuracy of analysis and chemical researches in general. This monograph is full of interesting details, including analyses of glass. *En résumé*, its leading features are the following: The action of boiling liquids, as specified above, upon glass vessels is proportionate to the duration of time of boiling; the action is proportionate to the surface which is in contact with the boiling fluid; the action is independent of the quantity of fluid which evaporates during a given time; the action decreases with the decrease of temperature of the solution; alkalies, even in dilute solutions, attack glass very strongly; acids generally act less than pure water, excepting sulphuric acid; among the salts, those act most energetically whose acids produce insoluble salts with lime—*e. g.*, sulphate and phosphate of soda, carbonate of soda, and oxalate of ammonia, the action of each of which increases with the degree of concentration of the solution; such salts as form, in water, readily soluble lime salts—for instance, the chlorides of ammonium, potassium, calcium, and nitrate of potassa—less strongly than pure water alone, and, with the greater degree of concen-

tration of these salts, the action decreases. Bohemian glass stands acids better than the kinds of glass containing soda; the Berlin porcelain ware is only perceptibly acted upon by alkalies. —*Chem. News, Lond. July 23, 1869, from Annalen der Chemie und Pharmacie, June, 1869.*

IMPROVED MODE OF MANUFACTURING GLUCOSE FROM STARCH.

By M. MAUBRE.

The author states that, by the usual mode of proceeding, a portion of the starch is always left in the state of dextrine; he therefore operates under pressure and a higher temperature. For this purpose, he applies a strong cylindrically-shaped iron vessel, internally lined with lead; this boiler is charged with 28 kilos. of sulphuric acid, at 60° Beaumé, and 2800 litres of water, and this liquid is brought to the boiling point by means of high pressure steam. When boiling, there is gradually run into this fluid a mixture of 1180 kilos. of starch and 2500 litres of water, acidulated with 28 kilos. of sulphuric acid. When the whole of this quantity has been introduced into the aforesaid boiler, it is closed, and the temperature within it raised to 160°, by means of high pressure steam introduced into the boiler by leaden and perforated pipes. After about four hours, the action is complete, the fluid run off into tubs, and the acid saturated by means of 84 kilos. of finely-powdered good limestone. After separation of the sulphate of lime, the fluid is evaporated to 20° B., clarified with animal charcoal, and next evaporated in vacuum pans, yielding an excellent and beautiful glucose.—*Lond. Chem. News, July 16, 1869, from Moniteur Scientifique, No. 300, June 15, 1869.*

ESSENCE OF SASSAFRAS.

By MESSRS. GRIMAUX AND RUOTTE.

The essential oil of sassafras, obtained from the *Laurus sassafras*, is, when recently rectified, a colorless fluid, which, at 0° C. (32° F.) has a specific gravity of 1.0815. The oil is a mixture

of a hydrocarbon and an inactive oxygen-containing principle; this latter consists, in 100 parts, of—Carbon, 74.43; hydrogen, 6.46; oxygen, 19.11. It is present in the natural oil in so small quantity that only just sufficient for a good elementary organic analysis was obtained. The hydrocarbon (safren) contains $C_{10}H_6$, and consists, in 100 parts, of—C, 88.23; H, 11.77. Its vapor density has been found equal to 4.84. Safren boils at about 156° . The oil further contains safrol, $C_{10}H_{10}O_2$, boiling at between 231° and 233° . Safrol is insoluble in water. Its specific gravity is 1.1141 at 0° ; at -20° it is not frozen. The authors have studied the action of bromine, of hydriodic acid, of perchloride of phosphorus, and nitric acid upon safrol, but state that none of these reactions gave such results as they expected. With bromine, safrol yields a compound of the formula $C_{10}H_5Br_5O_2$.—*Chem. News, Lond.* July 16, 1869, from *Bulletin de la Société Chimique de Paris*, June, 1869.

ON THE FUSING AND CONGEALING POINT OF FATS.

BY DR. TH. WIMMEL,

The temperatures at which fats fuse and congeal are given very differently by different authors. This difference may to a certain extent be accounted for by the natural variation of the fats, but from numerous observations of the author is confined to narrow limits, and the different results are probably due to the frequent mistaking of the fusing and congealing points, as well as to the methods employed for ascertaining them.

The temperature at which fats become transparent, and the temperature at which they become fluid, has been taken as their fusing point. The author reviews several methods and gives the preference to that of Bouis (*Annales de Chim. et de Phys.* xliv, 152), which with a few modifications he adopted for his experiments.

Cylindrical thin-walled glass tubes are selected, of one-eighth to one-sixth inch in diameter and perfectly smooth inside; they are within an inch of one end filled with the fused fat, and after it has congealed, laid aside for one or two days to allow the fat to assume its natural hardness. Lard which had been kept after congealing in cold water for two hours, fused at $33^\circ C.$, but

after two days at 42° ; butter under the same circumstances fused at 25° and 31.5° C. respectively.

Some fats become transparent several degrees above their fusing point, like tallow and suet; while Japan wax is perfectly transparent at 42° , but becomes fluid at 53 to 54° C.

The tubes with a thermometer are placed in a beaker glass, the bottom of which is covered with several layers of paper; water is then poured in until it reaches half an inch above the surface of the fat; the apparatus is then placed upon a piece of sheet iron and very slowly heated by an alcohol lamp, until the liquified fat is pushed up to the level of the surrounding water by the water entering at the lower orifice of the tubes. A few fats rise so slowly in the tubes that the temperature still perceptibly increases; the difference, however, rarely reaches half a degree.

All true fats, that is compounds of oxide of glycercyle, congeal more or less below their fusing point, while, for instance, wax and spermaceti congeal immediately below the temperature at which they fuse. On congealing the true fats always show an elevation of temperature sometimes to near the fusing point.

The author's experiments have given the following results:

Fats.	Fuse at	Congeval at	Temp. rises to
Beef tallow, fresh,	43° C.	33° C.	$36-37^{\circ}$ C.
“ older,	43.5	34	38
Mutton suet, fresh,	47	36	$40-41$
“ old,	50.5	39.5	$44-45$
Hog's lard,	$41.5-42$	30	32
Butter, fresh,	$31-31.5$	$19-20$	$19.5-20.5$
“ tub,	32.5	24	25.5
Japan wax,	$53.5-54.5$	$40.5-41$	$45.5-46$
Cacao butter,	$33.5-34$	20.5	$22-23$
Palm oil, fresh, soft,	30	21	21.5
“ fresh, harder,	38	24	25
“ old,	42	38	39.5
Oil of Mace,	$43.5-44$	33	$41.5-42$
Beeswax, yellow,	$62-62.5$	} Congeval just below the fusing point, without rise of temperature.	
“ white,	$63-63.5$		
Spermaceti,	$44-44.5$		

Wittstein's *Viertlj. Schr.* 1869, 272-278, from *Poggendorff's Annalen*, cxxxiii, 121.

NOTE ON CAPSICINA.

By DR. EMIL FELLETAŘ, of Pest.

Dr. Emer. Poor has used capsicum annuum (paprika of the Hungarians), in the general hospital of Pest, against intermittent fever, and regards 1 drachm of the powder as equivalent to 3 drachms of powdered cinchona bark. Dr. Felletár was induced to analyze it, and discovered a volatile alkaloid.

Capsicum is boiled with water acidulated with sulphuric acid, the decoction mixed with liq. potassa and distilled. The distillate has a strong alkaline reaction, and a penetrating odor strongly resembling that of conia; it is neutralized with sulphuric acid, evaporated to dryness, exhausted by absolute alcohol to separate ammonia salt, the solution evaporated and the residue treated with potassa solution, when the strong stupefying odor of conia is again developed. This alkaline solution was treated with ether; the ether distilled off possessed a strong alkaline reaction and, besides the odor of conia, reminded somewhat of pepper. After the ether had been distilled off, the residue in the retort became brown and decomposed. On mixing the distillate with a little muriatic acid, the odor disappeared, and on evaporation a minute crystalline residue was left.

The author promises further investigations.—*Arch. d. Pharm.* 1869, *Juni* 261, 262, from *Pharm. Post, Vienna, Aug. 1, 1868.*

ON THE VARIETIES OF TAPIOCA AND SAGO PREPARED IN THE MALACCAS.

It appears that, at the request of the resident Governor of the Malacca Islands, researches have been instituted concerning this food, at the Laboratory, at Welte Vreden, Java. The authors of this paper, MM. Maier, Moens, and Scharlec, found that three varieties of sago, denominated white, red, and blue, contain respectively—water 16·14, 18·83, and 18·47 per cent.; protein compounds, respectively—3·7, 2·5, and 2·4 per cent.; starch, fat, &c., respectively—79·88, 78·06, and 78·15 per cent.; ash, respectively—0·22, 0·52, and 0·94 per cent.—*Chem. News, Lond. July 16, 1869.*

THE FLORA OF PALESTINE AND SYRIA.

By REV. GEORGE E. POST.

Palestine and Syria embrace four distinct botanical regions :

I. The sea-coast plain and lower slopes of the hills, with the deeper valleys, which run far into the heart of Lebanon and the hill country of Galilee. The climate of this region is subtropical, and fosters the development of the banana, the palm, the sugar-cane and the orange. In this region frost is almost unknown, snow is quite rare, being seen only once in ten or fifteen years, and the hot sun of summer pouring on a soil made humid by irrigations, develops a luxuriant vegetable life.

II. The mountain sides, from 1000 to 4000 feet above the sea, with the valley of Cœle Syria, and the plain of the Orontes. Here the flora changes. The palm will no longer flourish. The banana refuses to fruit. The orange and the lemon cease to be productive, and their place is taken by the oak and the willow, and the pine and the maple. The olive and the mulberry are equally productive in this and the foregoing region, but in this form almost the only orchards, while on the plain they share the attention of the farmer with the before-mentioned trees. In this region wheat and barley flourish, and the vine attains the most perfect development. The herbaceous flora of these two regions is similar in type, except that as we rise on the mountain sides the *Tetragonthea* and *Stachys*, and *Squill* and *Pan-crati-um* of the plains begin to yield to the thorny mountain species of *Astragalus*, and *Tragacanth*, and *Eupigium*, and the aromatic *Origanums* and *Teueriums*

III. A third region comprises a small part of Cœle Syria, near the head waters of the Litany and Orontes, with the plain east of Damascus and Hums. The soil of this region is thin, being fit only for the production of grasses and thorny herbs, the scanty pasture of the Arab's flocks and herds. Here grow *Centaurea dumulosa*, and *Delphinium anthoroides*, and many *Astragali* and other *Leguminosæ*, while not a solitary tree, or even shrub, enlivens the dreary landscape. It is the type of those great waterless plains, which, for a short space, interrupted by the fertile district of Mesopotamia, extend eastward through Persia to the great desert of Cobi.

IV. The fourth of these regions is from the height of 4000 feet on Lebanon and Hermon, to their snow clad summits. Here the scanty remains of their once extensive forests of cedar and oak, and pine, end at an elevation of 6000 feet above the sea, and for the remaining 4000 feet of naked rock we have left such treelets as the *Cotoneaster*, and *Prunus prostratus*, and *Daphne oleoides*, while the herbaceous flora is represented in the lower regions by *Astragalus lanatus*, *Alyssum montanum* and *Ranunculus demissus* and *Viola ebracteolata*, and higher up by hemispherical bogs of a species of *Astragalus*, *Onobrychys tragacanthus* and *Acantholimon Libanoticum*, while on the extreme summit of Lebanon we find *Ucia canescens*, and of Hermon, *Pyrethrum densum*.

A fifth region might be enumerated, viz., the plain about Jericho, in which, owing to the depth of its surface below the sea, about 1300 feet, and the reflected glare of the sun from the mountains and surface of the Dead Sea, the heat mounts to equatorial degrees, and a flora is found resembling that of Lower India. More than twenty species are found here and around Engedi, which are not found again until we cross the Himalayas.

Thus it will be seen, that while on the summit of Lebanon there is a plant, *Oxygia reniformis*, belonging to the Arctic flora, in the valley of the Dead Sea we have representatives of the vegetation of the torrid zone, and this in the midst of a region with a temperate climate, by a special arrangement, seemingly designed to extend the range of human thought and observation within limits almost microcosmical. For while on any high mountain in the tropics we may have the near conjunction of these diverse forms of vegetable life thus answering the ends of variety and comparison, yet the general surface of the country in such cases would be torrid, and hence ill-adapted to the development of a hardy, independent race, such as inhabited the mountains of Palestine and Syria. In the Holy Land, however, the end is gained by sinking a small section down to a tropical level, leaving the rest of the country more favorably situated for the support of vigorous life, and the development of individuality of national character.

A single observation more is in place here. It is that in

Syria all plants necessary to life, or conducive to health, are either indigenous or flourish under cultivation in the open air, and that the indigenous materia medica supplies types of all the leading groups of remedies used in the healing art. This statement is illustrated by the fact that in the gardens of Syria grow the potato, bean in all its varieties, Indian corn, egg-plant, squash, pumpkin, artichoke, cucumber, onion, tomato, turnip, cabbage, cauliflower, spinach, carrot, beet, and many other vegetables and the lemon, orange, citron, pomegranate, apricot, plum (in all varieties), peach, apple, cherry, blackberry, mulberry, banana, fig, date, grape, and other kinds of fruit; the walnut, pistachio, filbert, almond and other nuts; the squill, castor oil plant, elaterium, scammony, colocynth, salep, acacia, galls, poppy, *Conium maculatum*, aloe, various Euphorbias, madder and many other medicinal and economical plants.—*The Am. Naturalist*, May, 1869.

THE CEDARS OF LEBANON.

Dr. Hooker makes the following interesting communication to a recent number of the "Gardener's Chronicle:"—"The Rev. M. Tristram, F.L.S., informs me of a most interesting discovery lately made in the Lebanon, viz., of several extensive groves of cedar trees, by Mr. Jessup, an American missionary, a friend of his own, to whom he pointed out the probable localities in the interior. Of these there are five, three of great extent, east of 'Ain Zabalteh,' in the southern Lebanon. This grove lately contained 10,000 trees, and had been purchased by a barbarous Sheikh, from the more barbarous (?) Turkish government, for the purpose of trying to extract pitch from the wood. The experiment of course failed, and the Sheikh was ruined, but several thousand trees were destroyed in the attempt. One of the trees measured fifteen feet in diameter, and the forest is full of young trees, springing up with great vigor. He also found two small groves on the eastern slope of Lebanon, overlooking the Buka'a, above El Medeuk; and two other large groves containing many thousand trees, one above El Baruk, and another near Ma'asiv, where the trees are very large and equal to any others; all are

being destroyed for firewood. Still another grove has been discovered near Duma, in the western slope of Lebanon, near the one discovered by Mr. Tristram himself. This gives ten distinct localities in the Lebanon, to the south of the originally discovered one, and including it. Ehrenberg had already discovered one on the north of that locality, and thence northwards the chain is unexplored by voyager or naturalist."—*The Amer. Naturalist*, April, 1869, from *Quarterly Journ. of Sci., London*.

THE FLOWERS OF EARLY SPRING.

BY REV. J. W. CHICKERING, JR.

There is perhaps a nearly equal charm about the notes of the first robin, and the sight of the first Mayflower. It will be the object of this article to enumerate, with a few notes upon each, some of our earlier floral visitors, in wood and meadow, in New England.

The list opens, not very attractively, with a plant well known to all, under the mal-odorous name of Skunk Cabbage (*Symplocarpus foetidus*), but whose flower is by no means so familiar, save to the observing botanist, and even he must be on the alert to obtain this first gift of Flora, in full perfection of color and aroma. Early in April, or even in March, almost before the ice is fairly melted, may be found in low marshy ground, this flower, clumsy in form, repulsive and snaky in color, dark purple, with yellowish blotches, and disgusting in odor; soon to be followed by the clump of large fleshy leaves, conspicuous during the rest of the summer. Like Stramonium, and most other noxious and unsightly weeds, it has been tried as a remedy for asthma, and with about as much effect.

In very pleasing contrast comes next *Epigaea repens*, or, as it is sometimes miscalled, Trailing Arbutus, better and more appropriately known throughout New England as the Mayflower.

This, among the very earliest, is also the choicest gift that Flora has in this latitude to offer us, alike for its beauty of form and color, its delicious fragrance, and its charming habit of peeping out, almost from the edge of the retreating snowdrifts. To find the first bunch of Mayflowers is the ambition of many a

boy and girl, as well as not a few children of larger growth. The finest specimens ever seen by the writer were from a mountain in Camden, Maine. It has also been used as a medicinal agent, but with no better nor worse results than many others. It is a true wild flower, resisting all attempts at domestication. Closely associated with this is found the *Hepatica*, in its two forms of *triloba* and *acutiloba*, one with rounded, the other with pointed leaves, probably merely varieties. The little clump of flowers pushes its way through the ground, often in advance of the leaves, and with the varying shades of pink, blue and white, seen in different plants, is a welcome addition to our spring bouquet, though lacking the fragrance of the Mayflower.

About this same time the southern aspect of rocky hillsides begins to whiten with the cheerful, though not specially graceful or showy flowers of the Early Saxifrage (*Saxifraga Virginensis*), and in forest marshes the inconspicuous little Golden Saxifrage, with a name longer than itself (*Chrysosplenium Americanum*). Soon in the meadows the carpet of living green is embroidered with the golden flowers of *Caltha palustris* or the English Marsh Marigold, improperly called Cowslip, and whether correctly or not, associated with creamy milk and yellow butter, while a little later are seen in the morning sun, the white stars of the Bloodroot (*Sanguinaria Canadensis*), as fragile as they are beautiful, generally lasting but for a day. Its orange-colored juice is much used in medicine as an emetic, an expectorant, and a liniment. This plant readily bears transplanting, increases in size under cultivation, and becomes one of the most attractive ornaments of the early flower border. In some parts of the country is found a somewhat similar flower, the Twin-leaf, or Rheumatism Root (*Jeffersonia diphylla*) also well repaying cultivation.

Meanwhile the pastures are beginning to whiten (last year remarkably) with the modest little Houstonia, or Innocence (*Oldenlandia cœrulea*), while a host of violets are making their appearance. *Viola blanda*, a wee, white, sweet-scented species, in the woods; *cucullata*, with its large blue flowers and hood-shaped leaves, with their curious palmate variety; *rotundifolia*, with yellow flowers and shiny leaves; and on the hillsides and

in the pastures the widely varying *sagittata*. *Claytonia Virginica*, well named Spring Beauty, must not be neglected in its moist and generally shady bed.

Along streams in open woodlands, we may find the Spring Cress (*Cardamine rhomboidea*), with large, white flowers; and just shooting up its green stalk, its first cousin the Winter Cress (*Barbarea vulgaris*).

Nor should the floral efforts of trees and shrubs be disregarded. Among the earliest indications of spring the Hazelnut (*Corylus rostrata*) shakes its long catkins along the roadsides, before any signs of swelling leaf-buds are visible, while the Willows (*Salix*), whose name is legion, begin to burst their warm wintry covering. The Savin (*Juniperus Virginiana*) is covered with its curious little flowers. The Hemlock (*Abies Canadensis*) is early in flower, as also the American Yew (*Taxus baccata*). All these require close examination to detect their inflorescence, but well repay it. The two maples, *Acer dasycarpum* (the Silver Maple) and *Acer rubrum* (the Red Maple), hang out their showy pendants very early. The Sweet Gale (*Myrica Gale*), along the edges of swamps, and the Sweet Fern (*Comptonia asplenifolia*), whose dried leaves are the basis of juvenile attempts at smoking, are now in flower; and *Direa palustris*, well named Leather-wood from the marvellous toughness of its bark, such that it is frequently used in default of leather or twine in repairing broken harnesses or sleds, hangs out its little yellow bells in advance of any leaves.

We close the list with the fragrant Sassafras (*S. officinale*), well known by its aromatic bark and curiously lobed leaves; not so well by its early clusters of yellow flowers, somewhat resembling those of the Sugar-maple; and the Spice-wood, or Fever-bush (*Benzoin odoriferum*) also highly aromatic and possessing, like the Sassafras, medicinal value as an aromatic stimulant. Such are the earliest flowers, which in forest, field or fen, invite the search of the botanist and the lover of nature.

Perhaps subsequent articles may give some notes upon the flowers of later spring, summer and autumn, with a floral calendar, and possibly an enumeration of some plants and shrubs well worthy of a place in garden or shrubbery, but hitherto neglected.

If this shall succeed in leading any to a closer study of nature's beauty, and the goodness and glory of the Creator, its object will be answered.—*The Am. Naturalist*, May, 1869.

ON AFRICAN TRAGACANTH.

BY DR. F. A. FLÜCKIGER, of Bern.

The substance to which I here apply the name of African Tragacanth is an exudation from the trunk of *Sterculia Tragacantha*, Lindl., a tree of moderate size, occurring in tropical Western Africa from Senegambia to Congo. Mucilaginous matter is known to characterize several plants of the order *Sterculiaceæ*, in which respect one of the most note worthy is *Sterculia urens* Roxb., an East India tree which exudes abundantly a substance resembling tragacanth. The exudation of the African species under notice has also long been known; but as its chemical nature has not hitherto been investigated, I think the following observations may be of interest. The specimen examined is authentic, having been collected with the plant by the late Mr. Barter, and transmitted to the Royal Gardens of Kew.

African Tragacanth, as I have received it, consists of irregular, knobby, undulated, droppy, or stalactitic masses, more or less bubbly or cavernous, often exceeding an ounce in weight, of a pale yellowish hue or almost colorless, in small fragments nearly transparent, but seen in mass somewhat opaque by reason of innumerable cracks, which also render it much more brittle than true tragacanth. Each mass is in fact traversed by curved fissures answering to successive protrusions of gum. Fragments of bark are often adherent to the flat or inner side of the pieces.

With 20 parts of water, coarsely powdered African tragacanth forms, like common tragacanth, a thick tasteless jelly; with 40 parts of water, the jelly becomes more fluid. Only a very small quantity of gum is really dissolved in the water; the filtered liquid is not precipitated either by neutral acetate of lead or by absolute alcohol, but on addition of basic acetate of lead it becomes a little turbid. The jelly itself reddens litmus paper. Neither thin slices of the dry tragacanth nor the jelly exhibit any trace of cellular structure or of starch, even when examined

in polarized light by means of the microscope. In this respect the tragacanth of *Sterculia* differs from that of *Astragalus*. As a means of promoting the adhesiveness of pilular masses I find the former, whether in the form of powder or mucilage, as advantageous as ordinary tragacanth.

The fine powder on exposure for some days to a temperature of 212° F. loses 20·50 per cent of its weight. The formula $C_{12}H_{22}O_{11} + 5H_2O$ would exactly require 20·5 per cent. of water. It is not soluble in an ammoniacal solution of peroxide of copper; repeatedly boiled with fuming nitric acid it affords an abundance of mucic acid.

The weight of the powder as obtained by drying it at 212° F. does not diminish at 230° F. (110° C). Upon incineration, the dried powder leaves 7·8 per cent. of ash of which the prevailing constituent is carbonate of calcium; 0·122 gramme of the ash indeed contain (after having been previously moistened with a solution of carbonate of ammonium and again gently heated, in order to prevent any loss of carbonic acid) 0·0587 gramme carbonic acid. The amount of the basic part of the ash is accordingly 4·08, referring to 100 parts of the above powder.

The dried and powdered gum was now submitted to elementary analysis* by means of peroxide of copper and a current of oxygen.

I. In the first experiment 0·3412 gramme yielded 0·5066 and 0·1648.

II. " second " 0·2982 " " 0·4380 " 0·1524.

that is to say

I. 0·1374 of carbon and 0·01831 of hydrogen.

II. 0·1195 " " 0·01693 " "

accordingly the percentage is in

	I.	II.
Carbon	40·27	40·06
Hydrogen	5·37	5·91

These numbers, however, referring to the crude tragacanth, must be calculated with regard to the fact, that 100 parts of the raw drug correspond to 95·92 parts only of pure tragacanth, if we deduct the above 4·08 per cent. of the bases contained in the ash.

* Performed in my laboratory by Dr. Kraushaar.

Thus the percentage-amounts are for				I.	II.
Carbon	.	.	.	41.98	41.76
Hydrogen	.	.	.	5.59	5.91

The formula of *gum arabic* shows the following numbers :

12 C	.	144	.	42.12
22 H	.	22	.	6.41
11 O	.	176	.	51.47
				<hr/>
				324
				<hr/>
				100.00

Common tragacanth and other similar gums, however, are usually referred to the formula

12 C	.	144	.	44.44
20 H	.	20	.	6.17
10 O	.	160	.	49.39
				<hr/>
				324
				<hr/>
				100.00

I restrict myself for the moment to the mere communication of the above facts and will not enter into the discussion, whether a gum, tragacanth or bassorin, exists or not, to which the formula $C_{13}H_{10}O_{10}$ should be assigned. Perhaps all the various kinds of these bodies may be referred to one and the same formula. The African tragacanth at least corresponds rather in this respect with gum arabic.

From the experiments here detailed I infer, that the African *Sterculia*-tragacanth may be used both in pharmacy and in the arts instead of the usual drug of Asia Minor. When the Niger and its tributaries are opened to trade, this gum may possibly form an important item of exportation.—*Pharm. Journ.*, May, 1869.

ON THE COPAL OF ZANZIBAR.

Extract from a letter from JOHN KIRK, M.D., F.L.S., dated Zanzibar, March 20, 1868.

The vegetation along the creek of Dan Salam* consists of many curious and, to me, unknown bushes, with heavy timber scattered here and there; among them was the *Trachylobium Mossambicense*, Kl., distinguished by its rounded head of glossy

[* Dan Salam is stated in the letter to be a spacious creek opposite the southern end of Zanzibar Island.—ED.]

leaves, with white groups of flowers projecting from the points of the branches. This is the "M'ti Sandarusi" (Tree of Copal) of the natives; and from it one variety of Copal is obtained. On examining the tree more closely, the trunk and main limbs were seen to be covered with the clear resinous exudation, now brittle and hard; from the upper branches it dropped down on the ground below, but not in a fluid state. To judge by the appearance it presented, I should say that the resin soon dries and hardens after being exuded, but must be easily broken off by violence; pieces of various tint and form were collected, some with insects imbedded; but all presented a smooth polished exterior, quite free from any pitting or "gooseskin" found on all kinds dug up from the ground. This sort is known in trade as "Sandarusi ya m'ti," or Copal from the tree; it is exported in considerable quantity to India, but not to Europe. Having thus established the source of one sort of Copal to be the *Trachylobium*, and transmitted the resin with full herbarium specimens of flower and fruit (which, if I mistake not, are to this day desiderata in all our collections), let me briefly state my reasons for thinking that in this tree we have the source of the older Zanzibar Copal, the semifossil or bituminized resin known in the English market as "Animé," and which is the most valuable of all resins for the manufacture of varnish, exceeding anything produced on the west coast for hardness, elasticity and polish.

There are three distinct kinds of Copal in the Zanzibar trade, subdivided by merchants into many classes, according to color, form, surface, and other peculiarities known to those in the trade, and affecting the value variously in different markets:—first, we have "Sardarusi-m'ti," Tree-Copal; second "Chakazzi," or Copal dug from the soil, but modern (seemingly) in origin, and obtaining a price like that of the former quality; the third is the true Sandarusi, like the second, dug from the soil, but hard, less soluble, and more than twice the value. This forms by far the greatest part of Zanzibar Copal, the export of which has sometimes reached 800,000 lbs. at a value of £60,000.

I have already described the "Tree-Copal;" it is gathered directly from the tree, which is known along the coast from

Mozambique to near Lamo, or from 3° to 15° south lat., but is most common between Cape Delgado and Mombas. The *Trachylobium Mossambicense*, Kl., is found along the creeks and on the maritime plain or the old sea-beach, but becomes very rare at a little distance inland, and quite unknown long before the change in geological structure offers an explanation of its absence. It requires the near presence of the sea for its growth, and dies when far removed from its influence.

The second sort, or "Chakazzi" gum, is found in the ground at the roots of modern Copal-trees, or in the country where these exist; but it is also, I am told, to be got with true Copal. That it is found near the existing forests is certain; and there the true Copal is not known; and we must accept with caution the statement that it is also found in the interior, from this well-known fact, that our informants habitually mix the inferior coast gum with the valuable produce of the interior. This "Chakazzi" is obviously the recent gum which has remained a short time in the soil after the death of the tree which produced it, yet long enough to take the impression of sand and stone, or other hard matter, as the hardest sealing-wax long felt on a coin will take the impression, or as ice will flow down a valley.

The Tree-Copal, or "Animé" of the English markets, is undoubtedly the produce of forests now extinct; for there is no tree now growing at a distance from the coast which produces it. It is obtained all along the ancient sea-beach, the maritime plain which here fringes the Continent to a depth of 20-40 miles in general. Some spots are richer than others, and some soils indicate good "diggings." When the rains which follow the north-east monsoon have softened the soil, the natives of the country commence to dig this from small pits, searching the soil as removed; but there is no system, and, like the gold-washings of Africa, so the Copal-regions yield not a fraction of what a little system and industry might produce. At present every clan-feud stops the search. The producer receives, even when successful, only a trifle from the Indian merchants, who again part with it, often paying enormous dues to the Zanzibar State, to the European and American traders. The supply, considering the extent over which it is scattered, seems unlimited; for at present

with most inadequate means and much discouragement to the laborers, the amount obtained is very great.

If we take into account the similarity of the recent and fossil resins in appearance, their near approach in physical properties, the fact that the recent gum, often being imbedded in sand, takes the characteristic surface-markings, and recollect that where now the good Copal is dug as a fossil the present Copal-tree, in all probability, once grew, when the sea was nearer to the hills than now,—I think we may be satisfied that the *Trachylobium* was the source of the old Copal, which is the resin only modified by time and long exclusion from air and light under the ground.

Perhaps it may be asked, is there not proof in the gum itself that the *Trachylobium* then existed? I have as yet found none: insects (all of them aerial) are often preserved; sometimes branches and leaves; but I have not seen evidence of the Copal-tree. When we remember that the resin soon hardens after being exuded, and that it runs from the underside of the main limbs, while the leaves, flowers and fruit are at the extremities of the branches, we shall see that leaves of the underwood which sweep the lower branches are much more likely to be embalmed than the leaf of the tree itself, which, besides, is hairy, glossy, and unlikely to adhere. If a part of the modern tree were found in the old hard gum, the proof would be complete; at present some doubt remains.

I have sent not only full herbarium specimens, but also specimens of the recent gum, of the “Chakazzi,” and of the valuable Copal, in which are many insects; and I would suggest that entomologists should assist us by their opinions whether these belong to existing species or not.—*Pharm. Journ.*, May, 1869, from the *Journal of the Linnean Society*.

DOUBLE SALTS OF CARBOLIC ACID.

At the Royal Medical and Chirurgical Society a paper, by Dr. Arthur Ernest Sansom, on these new salts was read.

Modern research has established, with a near approach to precision, the doctrine that zymotic diseases are due to the influence

of minute organized germs upon the body. In the case of vaccinia they seem to be demonstrable as minute granules. By inference, if not by observation, much can be learned concerning the physical qualities of these disease-producing organisms. They are capable of destruction by various chemical agencies; on this circumstance is based the theory and practice of disinfection. The agencies which destroy them are, however, not always chemical; some bodies which can be proved to have no chemical influence whatever have the peculiar property of arresting the vitality of organized bodies. Though means have been long adopted, in order to prevent the spread of disease, to neutralize disease-producing agencies externally to the living body, it is only lately that a plan of treatment has been pursued with the object of killing the vitally endowed disease-producing particles when once they have entered the living organism. The plan of treatment by the sulphites recommended by Professor Polli no doubt destroys germs, sulphurous acid and the sulphites acting upon them not as chemical, but as vital poisons. Perhaps the most powerful agent known possessing a like property is carbolic acid. This, however, in regard to its administration, presents many practical difficulties. The difficulties have been overcome by the discovery and employment of salts obtained by the neutralization of sulpho-carbolic acid ($C_6H_6SO_4$) with the alkaline, earthy, and metallic bases. The first compound salt, sulpho-carbolate of potash, was obtained by Mr. Crookes, F. R. S. The author has succeeded in producing, in addition, the following salts, all having the characters of true double salts, and possessing brilliant and decidedly crystalline form: sulpho-carbolate of sodium, of potassium, of ammonium, of magnesium, of zinc, of copper, and of iron. An inquiry instituted with the view of determining the relative efficiency of the various salts in staying fermentative action established the following results:—1, the sodium salt; 2, magnesium; 3, potassium; 4, ammonium. It was shown from experiments upon the lower animals, as well as from the results of administration to the human subject, that the following was an outline of the plan of action of the sulpho-carbolates. They are absorbed with great rapidity, exert no toxic effect (the human subject readily taking drachm doses

every four hours), are decomposed in the system into—*a*, carbolic acid, which, traversing the system, is exhaled by the breath; *b*, sulphate of soda, which permeates the tissues, and is excreted by the urine. Though carbolic acid cannot be detected in the tissues after death, it is shown that an influence enabling the body to resist putrefaction has been exerted; the urine passed also resists decomposition. Prolonged courses of sulphocarbonate of sodium given for two months to phthisical patients show that the drug could be administered not only with impunity, but with considerable advantage. Of 35 cases, 13 greatly improved, 15 considerably improved; 9 cases gained in weight an average of $2\frac{1}{2}$ lbs.—*Lond. Pharm. Journ.*, May, 1869, from *Medical Times and Gazette*.

SPONGE TENTS.

By J. B. HUGH, M. D., Ridgeville, Ohio.

Knowing the fact that absolute or *strong* alcohol will quickly set the fibres of common sponge, after having been moulded or compressed into any given size or shape, I was led to the following quick and easy method of preparing sponge tents, tampons, etc. :

The sponge is first thoroughly moistened with water and pressed as dry as the strength of the hand will permit; then having formed it into the desired shape and size by the hand, or by pressing it into a quill or any other tube or mould it is immersed into the alcohol. If the spirit is sufficiently strong, (90 to 100 pr. ct.) the sponge is *immediately* set into the given shape, which it retains perfectly after the pressure or mould is removed. It is then hard, firm and inflexible and may be trimmed to a sharp point or any other desired shape.

To restore it to its former size and shape it is only necessary to moisten it with a few drops of water. The alcohol sets the sponge perfectly, whether the amount of compression be much or little, so that the degree of dilatation, attainable by the use of tents thus prepared, will of course depend upon the size after moulding and the degree of pressure used. As this process of preparation works perfectly and *without delay* its advantages are obvious.—*The Cin. Lan. and Ob.*, July, 1869.

CHLORAL—A NEW ANÆSTHETIC.

BY GEO. J. ENGELMANN.

Being at present engaged in the chemical laboratory attached to Virchow's Pathological Institute, it is with particular pleasure that I communicate to you an important discovery for which we are indebted to its chief, Dr. Liebreich.

Though Dr. L. has laid his discovery before the scientific men of Berlin, in both the Chemical and Medical Societies, nothing has yet appeared in print, and the hasty account cannot but be exceedingly unsatisfactory, yet I trust it will not be without interest, as being the first which crosses the Atlantic.

The researches of Dr. Liebreich have disclosed a new and, to all appearances, most valuable anæsthetic, which bids fair to rank with chloroform and morphia as one of the benefactors of suffering humanity.

Chloral (C_2Cl_3OH), the aldehyde of trichloretted acetic acid, has indeed been known to chemists for perhaps the last thirty years, but its valuable medicinal properties have so far been utterly overlooked. It is a colorless fluid, of penetrating odor, but almost without taste, obtained by the action of chlorine gas upon alcohol, and is thus prepared in England on a large scale, being used for the manufacture of chloroform, as solution of caustic soda decomposes it, with production of chloroform and formate of soda $\left. \begin{matrix} CCl_3 \\ COH \end{matrix} \right\} + \left. \begin{matrix} H \\ Na \end{matrix} \right\} O = CCl_3H + \left. \begin{matrix} COH \\ Na \end{matrix} \right\} O$. Upon this process the gradual decomposition of the soluble and readily absorbed chloral in the alkaline fluids of the body—this slow production of chloroform—probably depend its effects upon the system.

We may compare the action of chloral to that of chloroform inhaled in small continued doses; in some cases a slight headache followed, apparently less than is produced by morphia. Little can, of course, as yet be said from the few cases on record, though it has been given internally with success to patients in different departments of the Charité. A solution of the hydrate in an equal quantity of water has been used—the largest quantity as yet given being 4 grammes. 4 grammes of the solution

contain 2 grammes (32 grains) of the hydrate, and decomposed give 1 1-3 grammes, about 21 grains of chloroform.

Upon animals the injection has been used with most satisfactory results; drowsiness comes on, and soon perfect stupor. The effect is mild and gradual, not the least sign of a *stadium excitatorium*, so disagreeable in chloroform. This death-like stupor was prolonged, according to the strength of the dose, as far as 18 hours; upon awakening, the animal appears in full possession of his faculties, and at once feeds.

This anæsthetic is applicable, it would appear, in cases of insomnia from general suffering, mental excitement, and even in cases of insanity, where it has already been successfully tested. Though it cannot be expected to supersede either chloroform or morphine, differing from both in its effects; we may confidently predict for it a wide and important field of action, and American physicians will certainly not be behind hand in giving chloral a fair test.

So much, until I shall be enabled to send you Dr. L.'s publication.

BERLIN, June 8th, 1869.

—*St. Louis Med. and Surg. Journal*, July, 1869.

IMPROVED PREPARATION OF NEUTRAL ACETATE OF COPPER.

Five kilos. of sulphate of copper are ground to a fine powder; this having been done, the powder is placed in a suitable vessel, and 7.5 kilos. of liquid ammonia added thereto. After the solution is effected, 10 kilos. of acetic acid are added, and the vessel containing the copper solution placed on a water-bath; as soon as crystals are observed on the top of the liquid, the latter is strongly stirred, which promotes the formation of crystals. By this process, about 4 kilos. of neutral acetate of copper are obtained from the above quantity of sulphate, while the mother liquor yields some sub-acetate of copper afterwards.

—*Chem. News*, June, 1869.

SULPHUR IN LOUISIANA.

It is well known to the public that for some time past the work of boring for oil has been prosecuted in Calcasieu Parish, near Lake Charles, by an association under the title of "The Louisiana Petroleum and Oil Company." Recently, after reaching to a depth of 442 feet, the labors of the company were rewarded by finding a strata of crystallized sulphur some two feet thick and very pure in quality. In boring further, it was found that for a distance of 90 feet the augur passed through lime rock which yielded about fifty per cent. of sulphur, with occasional strata of 6 to 8 feet in thickness of pure sulphur. The treasurer of the company says that the boring has now reached to a depth of 600 feet. It is a great misfortune that the depth of these deposits of sulphur are so far below the surface of the earth, as the cost of mining will be so much enhanced in consequence. We learn, however, that it is the intention of the company soon to commence the working of these mines, trusting that the wealth to be realized from the sale of a commodity in such general demand and of so great a market value, will amply compensate for all outlays.—*The Canadian Pharm. Jour.*, March, 1869, from *New Orleans Price Current*.

APOMORPHIA, A NEW BASE DERIVED FROM MORPHIA.

In noticing the objects exhibited at the *Conversazione* of the Pharmaceutical Society in the last number of this Journal, we alluded to a new base which has recently been produced as the joint discovery of Dr. Matthiessen, F. R. S., and Mr. Wright, B. Sc., of St. Bartholomew's Hospital. We were then only enabled to state that this base was produced from morphia, and that it possessed the properties of a powerful non-irritant emetic and contra-stimulant. Since the publication of that notice a paper by Dr. Matthiessen and Mr. Wright has been read before the Royal Society, an abstract of which has appeared in the 'Chemical News,' and is as follows:—

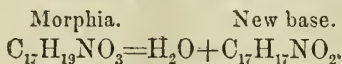
"When morphia is sealed up with a large excess of hydrochloric acid, and heated to 140°—150° for two or three hours,

on opening the tubes after cooling, no gas is found to have been formed, no is there any formation of chloride of methyl. The residue in the tube contains the hydrochlorate of a new base, differing considerably in its properties from morphia. It may be obtained in a state of purity by dissolving the contents of the tube in water, adding excess of bicarbonate of sodium, and extracting the precipitate with ether or chloroform, in both of which the new base is readily soluble, whilst morphia is almost insoluble in both menstrua. On shaking up the ethereal or chloroform solution with a very small quantity of strong hydrochloric acid, the sides of the vessel become covered with crystals of the hydrochlorate of the new base. These may be drained from the mother liquors, washed with a little cold water, in which the salt is sparingly soluble, and re-crystallized from hot water and dried on bibulous paper or over sulphuric acid.

"This hydrochlorate contains no water of crystallization. After drying in the water-bath it yielded results on combustion with chromate of lead and oxygen agreeing with the formula $C_{17}H_{17}NO_2HCl$.

"From a solution of the hydrochlorate in water, bicarbonate of sodium precipitates a snow-white non-crystalline mass, which speedily turns green on the surface by exposure to air, and is therefore difficult to obtain dry in a state of purity. This precipitate is the base itself.

"It hence appears that the new base is simply formed from morphia by the abstraction of the elements of water.



"We propose to call the new base apomorphia, for reasons given subsequently.

"When the hydrochlorate of apomorphia in a moist state is exposed to the air for some time, or if the dry salt is heated, it turns green, probably from oxidation, as the change of color is accompanied by an increase of weight. The base itself, newly precipitated, is white, but it speedily turns green on exposure to air. The green mass is partly soluble in water, communicating to it a fine emerald color,—in alcohol yielding also a

green tint, in ether giving a magnificent rose-purple, and in chloroform with a fine violet tint.

"The physiological effects of apomorphia are very different from those of morphia; a very small dose produces speedy vomiting and considerable depression, but this soon passes off, leaving no after ill effects,—facts of which we have repeatedly had disagreeable proof while working with it."

"Dr. Gee is now studying these effects, and has found that $\frac{1}{10}$ th of a grain of the hydrochlorate subcutaneously injected, or $\frac{1}{4}$ grain taken by the mouth, produces vomiting in from four to ten minutes. Our friend Mr. Prus allowed himself to be injected with $\frac{1}{10}$ th grain, which produced vomiting in less than ten minutes. From Dr. Gee's experiments on himself and others, he concludes that the hydrochlorate is a non-irritant emetic and powerful anti-stimulant. As from these properties it appears probable that it may come into use in medicine, we have called it apomorphia, rather than morphinine, to avoid any possible mistakes in writing prescriptions."—*Lond. Pharm. Journ.*, July, 1869.

INFLUENCE OF OIL OF SASSAFRAS UPON TOBACCO.

Editor Boston Journal of Chemistry :

The interesting article in the May number of the *Journal* reminds me of experiments made some years ago, when I was a smoker. I think I can suggest to your readers a more agreeable antidote, or denicotizer, than the tannic acid.

A valuable little "Treatise on Fever," by Dezin Thompson, Nashville, Tenn., contains the following statement:

"On one occasion, while waiting upon a tedious case of labor, I amused myself, along with the matrons present, in the enjoyment of the pipe rather freely, and suffered a good deal of vertigo as a consequence. In the course of the conversation which the incident gave rise to, one of the company observed that the dry bark of the sassafras combined with tobacco would prevent its unpleasant effects. On the first opportunity, I made the experiment, and found it true; the sassafras not only preventing the injurious effects of tobacco, but speedily removing them when produced. I tested this repeatedly by smoking in a strong

pipe until my head was very disagreeably impressed, and then reloading with a mixture of sassafras bark, a few puffs of which invariably dispelled the unpleasant sensations."

I have again and again, in my own person, verified the statement of Dr. Thompson; but have generally used the oil of sassafras, putting a few drops on the end, and allowing time for its absorption and diffusion through the cigar.

Is there any chemical analogy between oil of sassafras and tannic acid? Or is there any explanation of this identity of effect? Is their action purely chemical and on the nicotine? or is it physiological, and on the nerve-tissue?

Indulge me in some other extracts, which appear to me of great practical value, if true, in reference to the anti-narcotic and other powers of the sassafras:

"I added a drop of the oil of sassafras to every two grains of extract of hyoscyamus. Being very susceptible to the influence of nervous stimulants, I began by taking a common sized pill, and increased the dose until I took five at once, without producing any other effect than a most delightful sleep, such as I had not enjoyed since, when a child, I used to fall down under the shade of a tree when at play."

He made for a lady a syrup of butternut, containing sixty grains of hyoscyamus and thirty drops of oil sassafras to the half pint. Her little daughter, in the absence of the family, drank a quantity which "contained at least thirty grains. No injurious effects followed."

He gave to a negro suddenly seized with spasm in his presence, during the prevalence of cholera, a quantity of a like mixture, containing "forty grains of hyoscyamus. In a few minutes the spasm relaxed, and the man assisted all day in burying the dead."

"I had tested its power (oil of sassafras) fully in destroying the poison of insects and reptiles, such as mosquitos, fleas, spiders, bees, wasps, etc.; and, on one occasion, had an opportunity of testing its powers over the venom of the snake known as the copperhead, and found it succeeded promptly."

The little book from which the above extracts are taken was published ten years ago. I have seen no notice of it by the

medical journals. He writes like an accurate and truthful observer and narrator of facts, and it seems to me that the statements in reference to the properties of the sassafras are worthy of being known and tested. Let any one susceptible to the disagreeable influence of nicotine put a few drops of the oil on the end of a cigar, or on the tobacco in a pipe, and he will very soon be convinced that it is a complete antidote.

In making the experiment with the pipe, it is best to cover the oiled portion of the tobacco with some that is dry, or it will not burn so readily; or, if a blaze is used to light it, will burn too rapidly, and prove pungent and disagreeable. D. SHELBY, M. D.

HUNTSVILLE, ALABAMA, May 15, 1869.

—*Boston Journal of Chemistry*, July, 1869.

ON THE ALKALOIDS CONTAINED IN THE WOOD OF THE
BEBEERU OR GREENHEART-TREE (*NECTANDRA*
RODLEI, SCHOMBURGK).

By DOUGLAS MACLAGAN, M. D., F.R.S.E.,

Professor of Medical Jurisprudence in the University of Edinburgh;

AND ARTHUR GAMGEE, M.D., F.R.S.E.

In this paper the authors state the preliminary results of their examination of the bases contained in the wood of the greenheart-tree. When the wood is subjected to a process similar to that recommended in the British Pharmacopœia for the preparation of sulphate of bebeerina from the bark of the tree, a mixture of the sulphates of several bases is obtained. The product does not differ in a marked manner from sulphate of bebeerina as it occurs in commerce.

From the mixture of bases the authors separated, by repeated treatment with chloroform, a base which is very soluble in that menstruum. This base, when purified, occurs in the form of a white non-crystalline powder, possessed of an intensely bitter taste. It differs from bebeerina in the following particulars:—

1st. It fuses when placed in boiling water.

2d. It is much less soluble in ether than bebeerina. 100 parts of pure ether, of density 0.715, dissolve 0.96 part of bebeerina. 100 parts of the same ether dissolve .04 part of the new base.

3d. When treated with strong sulphuric acid and binoxide of manganese, a magnificent green color is first developed; this slowly passes into a violet of great beauty, not unlike that produced by the action of the same reagents on strychnine.

4th. The new base has a higher atomic weight than bebeerina. The mean of five determinations of the platinum in the platinum compound of this base showed the percentage of platinum to be 17.72. The mean of four ultimate analyses of the alkaloid gave the following numbers:—

	Calculated.	Found.
Carbon . . .	70.38	70.02
Hydrogen . . .	6.74	6.73
Nitrogen . . .	4.10	4.53
Oxygen . . .	18.78	18.71
	<hr/> 100.00	<hr/> 100.00

To this new alkaloid the authors assign the formula $C_{20}H_{23}O_4N$ ($C=12$), and the name Nectandra.

The difference between the composition of bebeerina, as ascertained by Von Planta, and that of nectandra, may be seen by comparing their formulæ,—

Bebeerina	$C_{18}H_{21}O_3N$
Nectandra	$C_{20}H_{23}O_4N$

After separating nectandra from the mixed bases obtained from the wood, the authors succeeded in separating a base which is much more soluble in hot and cold water, and which is insoluble in chloroform. It is deposited from a boiling solution in the form of yellow nodules. Its taste is both bitter and astringent. It appears to have a lower molecular weight than either bebeerina or nectandra. The percentage of platinum in the platinum compound was found to be 20.3.

Besides this base the authors have ascertained the existence of a third, whose characters have, however, not yet been carefully determined.

The authors intended continuing their chemical investigations on these alkaloids, and examining their physiological and therapeutical action. They express their great obligations to the

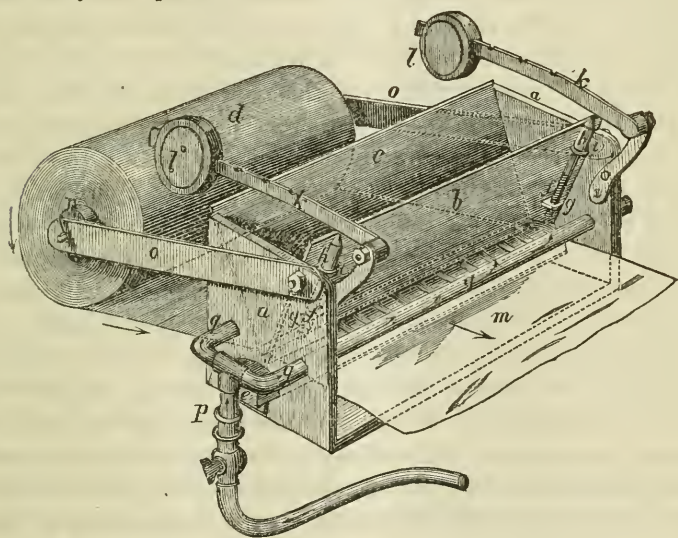
firm of Messrs. Macfarlane and Co., without whose generous aid the materials for the investigation could not have been obtained by them.—*Lond. Pharm. Journ.*, July, 1869.

A NEW PLASTER-SPREADING APPARATUS.

DEvised BY WILLIAM MARTINDALE.

Dispenser and Teacher of Pharmacy to the University College Hospital.

This apparatus consists of a trough with a false bottom, in which a series of jets from a Bunsen's burner are applied to heat the side plates, the cloth being passed under these to be covered with a layer of plaster.



- | | |
|--|--|
| <i>aa.</i> The "cheeks" or end of the machine. | <i>hh.</i> The heads of the screws. |
| <i>b</i> and <i>c.</i> The side-plates of the trough. | <i>ii.</i> Two threadless nuts. |
| <i>d.</i> The roll of cloth. | <i>kk.</i> The levers. |
| <i>e.</i> The support for the cloth and plates. | <i>ll.</i> Two moveable weights. |
| <i>ff.</i> The screws to regulate the front plate <i>b</i> . | <i>m.</i> The spread plaster. |
| <i>gg.</i> The nuts in which they work. | <i>n.</i> A roller on which the cloth is placed. |
| | <i>oo.</i> Two rests for this roller. |
| | <i>p.</i> The heating apparatus. |
| | <i>qqq.</i> Its two branches. |

The framework of the machine, made of cast-iron, has two

“cheeks” (*aa*) placed at right angles with the bottom. These cheeks form the ends of the trough. The interior of each has two grooves in which two wrought-iron plates (*b* and *c*) fit so as to allow of their being raised or lowered as required. The grooves of the back plate (*c*) are at an angle of 60° with the bottom, and in them the plate works of its own free gravity. The grooves of the front plate (*b*) are at an angle of 75° . The “play” of this plate is regulated as will be described. The edges of the plates at the bottom where they press upon the cloth are slightly bevelled. These two plates and the cheeks above mentioned form the sides and ends of the trough; the cloth (*d*) forms the bottom, as it passes through over an iron support (*e*). This support is in the shape of the section of a wedge, the acute end of which is terminated by an arc. The arc forms its upper surface over which the cloth is drawn; the support, as is shown in the figure, projects a little through each cheek, and is fitted accurately into its position by two keys placed under it, and resting on the cheeks, the borings through which correspond with its wedge-shape. It is covered with fustian, which gives it a yielding surface for the iron plates to press the cloth against whilst being drawn through. By these arrangements leakage from the trough is entirely prevented.

The play of the front plate (*b*), as has been stated, requires regulating for different plasters, and when they are required to be spread of different degrees of thickness; this is done by means of two screws (*ff*) working in nuts (*gg*) which are riveted to the plate; the heads (*hh*) of these screws work against threadless nuts (*ll*) attached to the cheeks (*aa*). By screwing or unscrewing these, the plate can be adjusted to spread any thickness of plaster. It will be observed that the screws can prevent the plate falling below any given depth, yet allow it to be raised to permit any inequality in the cloth, etc., to pass under it and again to resume its position. To assist it to do this, two levers (*kk*), with moveable weights (*ll*) attached, press upon the heads (*hh*) of the screws, and indirectly the pressure is exerted upon the plate, or the nuts (*ii*). For common strapping and plasters, which require to be thinly spread, the bolts are unscrewed so far that the heads of the screws do *not* rest on the threadless

nuts (*ii*), the plate therefore presses without any obstruction on the cloth, and, in addition to its own weight, pressure is exerted upon it indirectly by the weights and levers, as above stated. This plate is nearer the perpendicular than the back plate, because the spread-plaster (*m*) should be drawn through as nearly at right angles with it as possible.

The cloth being placed on a roller (*n*), which is suspended on two rests (*oo*), is passed through the bottom of the trough, taking with it a layer of the liquefied plaster (contained in the trough) as it is drawn off at (*m*).

By regulating the front plate with the screws (*ff*), skins, felt, or other thick material can be spread in the same manner as has been described.

The condition of the plaster, its temperature, and that of the plates suitable for spreading, are matters which require careful attention to produce satisfactory results.

The heating apparatus (*p*) is a Bunsen's burner with two branches (*qqq*), which perforate the cheeks at each end. Gas is supplied by means of an india-rubber tube. A stopcock regulates its admission through a small tube into the interior of the larger tube. Air is admitted to mix with the gas by holes near the bottom of this, the quantity being regulated by the usual nozzle. The mixture of gas and air is burnt in a row of jets in each branch directed against the plates (*b* and *c*); thus these and the liquefied plaster in the trough are kept at a nearly uniform temperature.

The burner can be detached and fitted into the machine inverted, so that, when not in use, the whole occupies but very little space.

Mr. J. H. Spencer, Southwark Bridge Road, constructed the apparatus under the direction and supervision of the inventor. *Lond. Pharm. Jour.*, July, 1869.

TINCTURA FERRI CHLORIDI.

BY JAMES W. MILL.

In view of the near approach of another revision of the Pharmacopœia, it is proper that individual experience in the preparation of its various compounds should be recorded.

Notwithstanding the flood of ferrated, ferro-phosphorated, and other fanciful elixirs and combinations of iron, which for the past few years has deluged the pharmaceutical market, the simple *Tinctura Ferri Chloridi* of the Pharmacopœia, for certainty and efficiency of action, has not yet been excelled, and despite its nauseous taste, is still much employed. Its easy and correct preparation, therefore, is still a matter of some importance.

Perhaps no preparation of the Pharmacopœia has given rise to more comment than this—indeed, the subject may be considered well-nigh, if not quite, exhausted. It is not, therefore, with the expectation of making any new revelations that the writer offers these remarks; his object is simply to give his own individual experience in the preparation of this tincture, hoping that to some one of the three thousand readers of *The Pharmacist* the revelation may not be altogether without interest. The writer does not wish to disparage the present officinal formula for this preparation. Properly executed, with due regard to the purity and strength of the muriatic acid employed, and its complete saturation, also the careful avoidance of loss during the frequent pourings, a correct result is obtained. Very strict attention, however, to these various details must be given, otherwise the resulting tincture will be imperfect. Particularly is it important to attend to the temperature employed to dissolve the iron. On this point the officinal formula is certainly at fault; it simply directs to heat it (the mixture of iron and acid) to the boiling point, then decant, etc. The complete saturation of the acid cannot be effected in this way; it is necessary that the temperature be *maintained* for some considerable time, longer or shorter, according to the quantity of material operated on. A careful manipulator would not, of course, be led astray by oversight in the formula; but the Pharmacopœia, being intended not alone for the scientific and expert, but for general guidance, should be so clear and explicit in its directions that the sin of an imperfect preparation may not justly be laid at its door. The writer, therefore, would erase the words “heat it to the boiling point,” and substitute “apply heat, and having continued it till all reaction has ceased, decant,” etc. The old formula for this tincture consisted in dissolving six troyounces of sub-carbo-

nate of iron in one pint of muriatic acid, and adding the solution to three pints of alcohol. It seems to have been a constant source of annoyance. The formula was evidently based on the use of the officinal sub-carbonate of iron, recently precipitated, in which state six troyounces would readily enough dissolve in a pint of muriatic acid. When, however, the sub-carbonate had been kept some time, and had become more or less completely converted into hydrated oxide, then the six troyounces would contain a much larger proportion of iron, and would, consequently, require a larger quantity of acid for solution. The formula made no provision for this change in the sub-carbonate, hence the whole trouble.

As an officinal process, however, for the preparation of Tinc. ferri chloridi, the experience of the writer leads him to regard the method of obtaining the necessary sesqui-chloride by the direct solution of sub-carbonate, or rather hydrated oxide, in muriatic acid, as, on the whole, preferable to that at present sanctioned by the Pharmacopœia.

The writer finds no difficulty in obtaining commercial sub-carbonate of iron that is perfectly soluble in the *proper amount* of muriatic acid, and sufficiently uniform in composition for all practical purposes. The following three samples will illustrate the various grades met with by the writer, and are believed to be a fair representation of the commercial character of this article :

No. 1. 100 grs. exposed to a red heat for half an hour, yielded 85 grs. sesquioxide, and was of a dark, reddish-brown color.

No. 2. 100 grs. ignited in the same way, yielded 83 grs. sesqui-oxide. Color was lighter than preceding.

No. 3. 100 grs. ignited in the same way, yielded 80 grs. sesqui-oxide, and was a shade lighter in color than No. 2.

An article labelled "Ferri Proto.-Carb. (?) Precip.," and put up in bottles, is also met with. It contains a large proportion of proto-carbonate, and is well adapted, doubtless to therapeutic administration. In the preparation of tincture, however, its use is not attended with any advantage, and being more expensive, it is here left out of consideration, reference being had only to

the article usually known as sub-carbonate of iron, and which is sold in the market at about 25 cents per pound. From the samples above given, the variation in sesqui-oxide strength, it will be observed, is only five per cent. The sub-carbonate has evidently been exposed to just sufficient heat to free it from its carbonic acid, without affecting its water of hydration, so that in composition it approaches very nearly hydrated oxide, ($\text{Fe}_2\text{O}_3 + 2\text{H}_2\text{O} = 98$), which contains 81.63 per cent. sesqui-oxide.

One equivalent or 80 grs. sesqui-oxide of iron, (Fe_2O_3) requires for conversion into sesqui-chloride, three equivalents, or 106.5 grs. chlorine (Cl.), which amount, basing the calculation on the table given in the U. S. Dispensatory, is contained in 282.19 grs. muriatic acid 1.16. Six troyounces of a sub-carbonate like *e. g.*, No. 2, would give 2390.40 grs. sesqui-oxide, and would require 20 troyounces and 245 grs. of the same acid, 80:282.19::2390.40:10,025. Practically, however, a somewhat larger quantity is necessary to effect complete solution, and as an excess of acid in the tincture is considered desirable, a little more than enough simply to dissolve the sub-carbonate should be used. In the experience of the writer the following formula has proved successful:

R. Ferri Sub-carb.	. . .	six troyounces.
Acid Muriat., C. P. sp. gr. 1.16		twenty-three troyounces.

Introduce the sub-carbonate into a quart flask, add the muriatic acid, and having allowed the mixture to stand for a few hours, apply heat, and *boil* for a few seconds, then add sufficient nitric acid (more or less, according to the quantity of proto-chloride present, usually about half a fluidrachm,) to sesqui-chloridize the small quantity of proto-chloride present, or till the solution ceases to give either a blue or green coloration with ferricyanide of potassium. When the solution has cooled, add to it sufficient stronger alcohol to make the measure up to eighty fluidounces. This tincture has the sp. gr. 995, and is permanent. By calculation it would yield 29.88 grs. sesqui-oxide to the fluidounce, and is therefore a little stronger in iron than the officinal. Were it prepared from either of the other samples of sub-carbonate the variation would be a little greater; but even then so slight, as

not to be taken into account. Should exact accuracy be desired, the sub-carbonate can very readily be assayed ; a careful ignition and weighing being all that is necessary. The muriatic acid employed should be the chemically pure ; the ordinary acid being too much contaminated with sulphurous and sulphuric acids to produce a correct result. Perhaps the presence of tersulphate of iron in the tincture might not be regarded as a very serious impurity, but it can be so easily avoided, and the purity of the tincture guaranteed, by the use of chemically pure muriatic acid, that the small extra outlay (about 10 cents per pint) is not worthy of mention.

The writer has thus, very imperfectly, it is true, laid before the readers of *The Pharmacist* his individual experience in the preparation of this tincture ; will not some of them reciprocate by giving him the benefit of *their* experience in the preparation of Pharmacopœia or other compounds, and thus, at the same time, help to make *The Pharmacist* what it is intended to be—a sort of mental exchange for the relation of experiences, and the comparison of views and opinions on all subjects connected with the Pharmaceutical interests.—*The Pharmacist*, June, 1869.

POISONING BY SUBSTITUTION OF CYANIDE OF POTASSIUM FOR CARBONATE OF AMMONIA.

Inquest held in Dublin on the late Mr. F. Grattan Guinness, 7th and 8th of June, 1869.

The above case of accidental poisoning has created in Dublin intense excitement, partly from the rarity of such accidents in Ireland, and also from the social position which Mr. Guinness held. The inquest extended over two days. Mr. C. Swayne, the assistant who compounded the medicine, was in custody during the first and part of the second day's proceedings. He was an assistant to the firm trading under the name of Hamilton, Oldham, Long, and Company, who have two establishments in Dublin, and are now about to open another at Kingstown. Mr. Darley, Q. C., appeared for the relations of the deceased, and Mr. Macdonogh, Q. C., represented the firm in whose establishment the mistake occurred.

The first witness called was Mr. Edward Sadlier, clerk to the Messrs. Burke, wine merchants, 16 Bachelor's Walk. He deposed that on Saturday, the 5th of June, the deceased gentleman, who had an office in the same house, came there; on the previous day he told witness to send the two empty bottles that were on his desk to Oldham's, to have them filled with the same mixture that had been in them before; witness sent the bottles by one of the porters, named Lynham; when witness came to the office on Saturday morning he found two bottles papered up, sealed and directed to the deceased; later in the day he saw the deceased with a bottle in his hand, which he held up to the light, and said, "This is not the same they gave me before; what I got before was brown; I am sorry I did not show it to Dr. Bourke before he went." He then opened the bottle and put it to his mouth. Witness said to him, "You had better not take it, take care." Soon after he left the room and went into his own, and the deceased went out of the office, and came back in, perhaps, half an hour; the deceased then had a bottle containing a brown fluid in his hand; he said, "They have given me another bottle." The bottle containing the brown fluid was a different one from that which he had at first. Witness then went into his own office, and deceased soon came in, and went to the opposite side of the desk at which he was standing, and said, "It is choking me! It is choking me!" He made a peculiar moan, as if his throat was affected. Mr. John Burke came in from the store at the moment, and witness said to the deceased, in his presence, "Take care; have they given you poison?" He then went into Mr. Burke's office; Mr. John Burke came running in, and said, "Run for Dr. Bourke! Witness ran to the stores, and sent a vanman for the doctor; witness went to Butler's, in Sackville Street, and brought one of the gentlemen from that establishment. When they came back, the deceased had been brought into a back room, and he found that he was dead.

Dr. W. Bourke said he had known the deceased from his childhood, and was his medical adviser. On the 25th of May had prescribed for him a strengthening mixture, which was prepared at Oldham and Co.'s in Grafton Street. He had been in a

low, weak state, and suffered especially from a weak action of the heart.

Mr. Edward Long, a member of the firm of Hamilton, Oldham, Long and Co., explained the circumstances under which the mistake had occurred. It appeared from the evidence of this witness, and that of the porter, George Hudson, that it was the practice of the firm, in replenishing bottles from the stores, to have a double check against mistakes, by requiring that the empty bottles should be filled in the presence of two persons. In this instance, however, the rule had been departed from. The assistant, Mr. Swayne, finding the carbonate-of-ammonia-bottle empty, gave it to George Hudson, the porter, to be filled, but did not see it filled. The porter found a stone-jar at the top of the stairs, containing a white salt, which he thought was carbonate of ammonia, and with this the bottle was filled. The jar had no label to it, and proved to contain, not carbonate of ammonia, but cyanide of potassium. This was used by the assistant in preparing Mr. Guinness's medicine, which should have consisted of infusion and tincture of bark, cinnamon-water, and carbonate of ammonia, to be taken with lemon-juice. The dose taken by the deceased contained twenty grains of cyanide of potassium. It was stated that Mr. Swayne, the assistant, was busily engaged in dispensing, and was therefore unable to accompany the porter in filling the empty bottle; also that the bottle into which the cyanide of potassium was put, retained sufficient ammoniacal smell to disarm suspicion which would have arisen from the absence of this character. On the explanation of these circumstances, Mr. Swayne, who was previously in custody, was set at liberty before the conclusion of the inquiry.

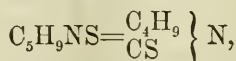
"The jury after a lengthened investigation, returned the following verdict :—

"We find that Frederick Darley Grattan Guinness accidentally came by his death, on Saturday, the 5th day of June, 1863, from a dose of poisonous medicine, compounded by mistake at the establishment of Messrs. Hamilton, Oldham, Long and Company, No. 107 Grafton Street, and we consider that there was not sufficient circumspection taken there for the public security, on which account we strongly urge the necessity of strict pre-

caution being observed by the firm, against whom we feel obliged to record our deep censure."—*Lond. Pharm. Journ. July, 1869.*

ESSENTIAL OIL OF COCHLEARIA OFFICINALIS.

It appears that this essential oil has been frequently confused with the essential oil of mustard, from which the author (Dr. A. W. Hofmann), on experiment, found it essentially different. The boiling point of the oil of *Cochlearia* is at about 160° C., that of the genuine oil of mustard at 147° C. On being treated with ammonia, the essential oil of *Cochlearia* yields a beautifully-crystallizing substance (the thiosinnamin of the essential oil of *Cochlearia*), which fuses at 135° C. Analysis of the oil and the ammonia compound just alluded to, prove the oil to be the mustard oil (*Senföl*), of the butyl series—



When butylamine (prepared from butyl alcohol by fermentation) is treated with sulphide of carbon and chloride of mercury, a mustard oil is obtained of the same composition and about the same boiling point, but the odor indicated that only an isomeric substance had been obtained, and further research proved that the ammonia compound of the oil, thus artificially produced, had its melting point at 90° C. The author intends to proceed with researches on this subject.—*Chem. News, June, 1869, from Berichte der Deutschen Chemischen Gesellschaft zu Berlin.*

ON THE GROUND NUT ARACHIS, HYPOGÆA.

M. F. A. FLÜCKIGER.

This is a monograph on the subject, and includes the origin, discovery, occurrence, and commercial history of the fruit of a plant belonging to the natural order of the *Leguminosæ*. The fruit is known, in English language, as ground-nut, earth-nut, pea-nut and manilla-nut; in French as *orachide*, or *pistache de terre*. The plant which yields this fruit is a native of tropical and sub-tropical regions, and belongs especially to Africa. The average weight of the seeds contained in the fruit and bearers of the oil

is 0.5 grm.; they yield from 38 to 50 per cent. of oil, which consists of a mixture of glycerin compounds and three different fatty acids, arachinic acid $C_{40}H_{80}O_4$, fusing at $75^{\circ}C.$; hypogaeic acid, $C_{32}H_{64}O_4$, fusing at $35^{\circ}C.$; and palmitinic acid, $C_{32}H_{64}O_4$, fusing at $62^{\circ}C.$ The seeds contain 28.85 per cent. of protein compound, 13.87 per cent. of woody fibre, and 7.16 per cent. of gum and sugar.—*Chem. News*, June, 1869.

DETECTION OF PRUSSIC ACID IN THE BLOOD.

In an article* on the toxicological investigation which took place on the murder of the Countess Chorinsky, M. Buchner gives some interesting remarks on the detection of prussic acid in the blood. In this case the blood was of clear cherry-red, and preserved this tint for several days. At the end of five days it was still perfectly liquid, and some weeks elapsed before it gelatinized. It resisted putrefaction for a long time when preserved in a stoppered bottle, but the red globules were destroyed in a few days. It presented no odor of prussic acid, but when diluted with water and distilled, the first portions of the distillate possessed a distinct smell of the poison, and gave positive results with the usual tests. By this means the acid was detected, even after the lapse of fifteen days. M. Buchner found Liebig's test (sulphide of ammonium) to be the most delicate.

Several years ago, Schönbein showed that the blood globules decompose oxygenated water, liberating ordinary oxygen; but the blood diluted with twice its volume of pure water, and containing a small quantity of prussic acid, loses almost entirely this catalytic action, while the mixture assumes a deep brown color. This reaction affords the means of recognizing an infinitesimal quantity of prussic acid. Thus, if 50 grammes of defibrinated ox-blood be mixed with 450 grammes water and 5 milligrammes of anhydrous prussic acid, the mixture becomes deep brown in presence of oxygenated water. In this case Buchner found Schönbein's test to be a very delicate one. The blood,

* 'Revue des Cours Scientifiques' and Jour de Pharm.

however, should not be very old, because then the blood has attained a deep color, which the oxygenated water does not change.—*Pharm. Journ., London, July, 1869.*

NITROPHENIC ACIDS.

BY JOSEPH HIRSH.

Ever since the discovery of the valuable antizymotic and disinfecting properties of carbolic acid, its production in the highest degree of purity has been aimed at, and, luckily, with signal effect. The good fortune of producing this substance perfectly pure does not consist in the sought-for acquisition of the *ne plus ultra* disinfectant which its final purity promised, but rather in the discovery that its accompanying sister alcohols of the cresylic and xylic series, rejected so far as worthless, cumbersome appendages, possess superior antizymotic qualities, and the numerous good results ascribed to the use of carbolic acid were in reality due to the presence of the other alcohols mentioned, which even to-day may be found in the bulk of the carbolic acid in market, of which the perfectly pure fills only a portion. In practice, the dark, impure creosote was preferred to the light colored, even before the above constituents of the same had been thoroughly studied; experience having demonstrated the result, not yet viewed by the light of science.

Of equal date with the birthday of the fame of carbolic acid as a disinfectant, are the last honors paid to chlorine, nitric acid, and their compounds for the same purpose; and they are only employed where their low price is an offset, though a questionable one, to the use of phenic acid. It has even been stated that, as a disinfectant, carbolic acid and the mineral acids mentioned should never be used jointly; the suggestion having been made, *a priori*, from the consideration that in such a union the carbolic acid would lose its individuality. This reasoning was correct, but it lacked the basis of experiments to prove that the resulting compound did not possess the azymotic effects of carbolic acid to a considerable extent.

Having last year experimented on the *modus operandi* of carbolic acid (a brief review of the experiments having been pub-

lished in the April number of the *Chemical News*), I instituted a series of similar experiments with binitrophenic acid, determining the comparative amount and rapidity of coagulation of albumen from different sources, with the acid in various degrees of dilution. A solution of the acid in ten thousand parts of water produced in bloodserum a coherent film of coagulum, while the same solution of carbolic acid produced only turbidity, the turbid liquid passing partly through a filter.

If the property to coagulate albumen is taken as the *modus operandi* of carbolic acid, against which suggestion no serious objection seems to have been raised, the production of the same result by another substance should recommend the latter for the same purpose. The nitrophenic acid seems not only to coagulate albumen readily, but in a dilution of 1-100,000 it produces that loose, cloudy coagulum which carbolic acid shows in a solution of ten times greater concentration.

To test its effect upon the lower classes of animal life, a tub (half a barrel) was set aside for a few days, in a warm room, its bottom covered an inch high with blood. The decomposition of the latter had progressed so far that the sides of the tub were literally covered with white maggots, some of them measuring five-eighths of an inch in length, and one-thirty-second of an inch in diameter at their thickest extremity, that of the head. The countless smaller ones showed, by the billow-like motion of the whole mass, that they were full of life and vigor, and of promise of increase. A solution of one per cent. of nitrophenic acid was brushed on the inside of the tub, in the evening, very carefully. This did not seem to disturb the good humor and activity of the creatures, for they moved along as lively as ever. But the next morning the sides of the tub were perfectly clean, the worms having retreated to the centre of the tub, where they all lay dead, in one heap, in the blood. After the lapse of some weeks the same blood showed no sign of renewed life, nor the unpleasant odor of decomposing animal matter. The preparation used was the binitrophenic acid, prepared from the crude carbolic acid. It possessed the aromatic, pleasant odor, reminding faintly of nitrobenzol, and due probably to the presence of this substance in minute quantity. This pleasant odor is certainly a valuable

property of a disinfectant, when we consider how sensitive many persons are to the odor of even the pure carbolic acid, and how much more they abhor that of the impure, often surcharged with hydric sulphide. A disadvantage to the nitrophenic acid is its color; but, as it can be used in much greater solutions than the carbolic acid, this ought hardly to be objectionable, especially as in many preparations habit has befriended us with dark color, which then we rather like. The agreeable odor is especially and perhaps only present if the preparation is made from the impure carbolic acid, which also has the advantage of economy.

Although the above experiments refer only to the binitrophenic acid, I do not hesitate to assume the same superiority for the other nitro-compounds. We have the trinitrophenic or picric acid, the value of which in malarious fevers has often been tested, and ranked with that of quinia. The temporary yellowness which it imparts to the skin renders it an undesirable substitute for quinia. Perhaps in many instances it has failed to give relief, but the same objection has been made to quinia. The chlorophenic and sulphophenic may, by analogy, be expected to act with more energy than carbolic acid; but I reserve remarks on the same until I have finished my experiments in this direction.—*The Pharmacist, Chicago, August, 1869.*

AMERICAN PHARMACEUTICAL ASSOCIATION.

The 17th annual meeting of the Association will be held in Chicago, on the 7th day of September next, at 3 o'clock P. M. The specific place of meeting, and the arrangements for the accommodation of those in attendance, will be announced by the Local Secretary. As this will be the first meeting held in the metropolis of the Northwest, and will probably attract much attention in that section, it is earnestly desired that a large and widely diffused representation of the membership will give evidence of a continued and growing interest in the Association. Druggists and pharmacists eligible for membership are invited to present themselves as candidates, and thus aid in extending the Association and increasing its influence.

PHILADELPHIA, 6th mo., 1869.

EDWARD PARRISH,
President.

Editorial Department.

THE CHICAGO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—Every thing promises fair for an interesting meeting of the Association. The information needed in our last is supplied by Mr. Albert E. Ebert, Chairman of the Reception Committee, and we have copied it below. Knowing the advantage of co-operation in getting a reduction in railroad fare to members on these annual occasions, Mr. William Wright, of New York, has interested himself in the matter, and by a circular gives the information that an arrangement has been made with the Erie and Lake Shore Railroads by which members will be taken to Chicago, via Buffalo, leaving New York on Saturday morning the 4th inst. at o'clock, reaching Buffalo that night; stopping over till Monday morning, so that an opportunity will be afforded to visit Niagara Falls on Sunday; and arriving in Chicago Tuesday about 6 P. M. The tickets for the excursion to and from Chicago, good to the 28th of Sept., cost 25 dollars each person. Those desiring to take part in it are requested to address Mr Wm. Wright at once, enclosing \$5, and paying balance at the time of starting. So far as we have been informed the prospect of a numerous attendance from the Eastward is favorable.

SEVENTEENTH ANNUAL MEETING TO BE HELD AT CHICAGO, SEPT. 7TH, 1869.

CHICAGO, July 15th, 1869.

RESPECTED SIR:—The seventeenth annual meeting of the American Pharmaceutical Association will convene in this city, in the Hall of Lombard Block, on Monroe Street, corner of Custom House Place, on Tuesday, September 7th, 1869, commencing at three o'clock P. M. A cordial invitation from the Chicago College of Pharmacy and the Pharmacists of this city is hereby tendered to all members of the Association, and others of the profession, to visit Chicago at that time; and it is hoped that the sessions of the Association will be a profit and pleasure to all who can avail themselves of the opportunity.

In accordance with the custom of former meetings it is desirable that members, as much as possible, be located at the same hotel. With this object in view, the committee have selected the Tremont House, as the headquarters of the Association during its sessions. Parlor No. 1 of this hotel will be reserved for the use of the members, where a registry will be kept, and a Committee of Reception be in attendance for the purpose of giving the necessary information to visitors. A reasonable deduction

from the usual rate of board has been arranged for. Visitors, in placing their names upon the hotel register, will therefore affix the initials "A. P. A." in addition to their signatures. The seventeenth annual meeting, it is expected, will be the most important in its bearing upon Pharmacy that has ever been held. The important question of the legal aspect of Pharmacy will be carefully considered, and some definite action probably taken thereupon.

The proximity of the decennial revision of the United States Pharmacopœia will also give importance to the deliberations of the convention. Essays and volunteer papers, and applications for membership may be sent to the undersigned. Specimens of materia medica, chemical and pharmaceutical preparations, plants, apparatus, etc., are solicited for exhibition, and may be sent to Henry W. Fuller, local secretary of the American Pharmaceutical Association, in care of Fuller, Finch & Fuller, No. 24 Market street.

As this will be the first meeting of the association in this section of the country, it is hoped that a large representation of Western druggists will be brought together.

I am, sir, yours truly,

ALBERT E. EBERT,

Chairman of the Reception Committee, cor. State and Twelfth streets.

ST. LOUIS COLLEGE OF PHARMACY.—We are informed by JUSTIN STEER, *Secretary*, that at a meeting of the St. Louis College of Pharmacy, held June 28th, 1869, the following members were elected as delegates to the meeting of the Association, to be held at Chicago, Sept. 7th next, viz:—

Dr. J. S. B. Alleyne,
Dr. O. F. Potter,
Dr. C. L. Lipps,
Mr. A. H. Weber,
Mr. Wm. H. Crawford.

THE PRESCRIPTION OF EXPLOSIVE MIXTURES BY PHYSICIANS.—A correspondent who feels himself much aggrieved, informs us that a few months since he suffered severe personal injury by the explosion of the ingredients of a prescription, of which the following is a copy:—

" R	Potassæ Chloratis	ʒiss.
	Acidi Tannici	ʒiss.
	Olei Gaultheriæ	gtt. xx.

Mice ft Pulvis I

Sig. Put in a quart of water."

It appears that this mixture had been repeatedly dispensed without ignition, but on this occasion the physician called and requested double the quantity to be prepared, and the pharmacist accidentally used on this occasion a new *wedgewood* mortar, with rough surface, first powdering the chlorate and then adding the other ingredients, and continuing the trituration—when a violent explosion occurred, injuring his hands and burning his face and eyes seriously. Our correspondent believed that the physician was aware of the explosive nature of the mixture, as he is reported to have said immediately afterwards "*that he knew that the mixture as ordered would explode,*" he being the first physician called in. If this was true, it leaves an inference of motive in regard to the prescriber not to be envied. It would have been quite right to have given a caution to have saved himself from the charge of ignorance or design. Our correspondent, smarting under the *effects*, may be warped in his feelings toward the prescriber. With this *we* have nothing to do, but may embrace the occasion to offer to our readers who are not posted in such matters, a caution that any organic substance having a large equivalent of loosely combined elements like sugar, tannin, several of the glucosides and other neutral bodies should always be mechanically united with chlorate of potassa with great caution, and the chlorate should be powdered alone and then mixed with the other ingredients, *separately powdered*, on paper. Physicians, where they require such mixtures, and themselves are aware of the danger, are not without culpability if they prescribe at random, without due precaution, on the presumption that every dispenser is a thorough chemist. If, as is more frequently the case, they prescribe in ignorance of the incompatible character of the ingredients, they of course are not to blame. When such ingredients can be mixed without damage, every apothecary *ought* to be able to do it, yet ignorance of particular reactions in such a case should not necessarily be considered unjustifiable ignorance. We have had this accident to occur under our own supervision, but the operator being aware of the liability, used precautions that enabled him to escape uninjured.

THE PHARMACIST.—We are in receipt of two numbers of the new volume of this Journal, now under the editorial supervision of our friend Albert E. Ebert, Mr. Sargent having virtually retired as he announced. The Pharmacist sustains its character so well begun in the first volume. The present Editor has the energy, perseverance and knowledge requisite to make it a first-class journal, and the *business* men of Chicago have shown their tact in transferring its support from the subscribers to the advertisers, its subscription being remarkably low. The advertising sheets, therefore, are a very important part of the issue, and are Edited, we presume, by Mr. T. Whitfield, of Chicago. This plan of having a business editor for the advertising department, carried out so success-

fully by the Pharmaceutical Journal of London, is well worthy of imitation where this feature is depended upon for income.

UNIVERSITY OF MICHIGAN SCHOOL OF PHARMACY.—This school, under the direction of Prof. Silas H. Douglass, is gradually raising itself into notice. We cheerfully give place to the following note and list as bearing on pharmaceutical progress. We are not well assured of the preliminary requirements of this school as regards practical training in the shop, and hence do not know the real value of the diploma granted. In this country the words "pharmaceutical chemist" have no meaning beyond the other terms used to express the business or profession of a pharmacist. But in England they apply only to the members of the Pharmaceutical Society who have complied with the Act of Parliament, and can be used by no others under penalty. If the Michigan students are apothecaries who go there from the shop to get their laboratory education it is all well, but if any one without other training in pharmacy than is obtainable at the University School is pronounced a qualified apothecary, it should be known and appreciated. An apothecary without shop experience is like a medical graduate without hospital or other practice. They are both of doubtful reliability.

UNIVERSITY OF MICHIGAN, }
Ann Arbor, July 5th, 1869. }

Editor American Journal of Pharmacy,

DEAR SIR.—I send you herewith a list of the (23) graduates of the Pharmacy Department of this University, who received the diploma of "Pharmaceutical Chemist" at the annual commencement, June 30th. This class of 1869 is the first of its kind graduating, and receiving this diploma, at this Institution.

The course of study required of candidates for the diploma comprises: Lectures in Inorganic and Organic Chemistry, Materia Medica, and Principles of Pharmacy; with laboratory courses in Qualitative Analysis, Toxicology, Analysis of Urine, Volumetric Analysis, and a somewhat extended course in Pharmaceutical operations. Also class exercise in Botany.

Very respectfully

A. B. PRESCOTT,
Assistant Prof. and Secretary.

Christopher F. Arnold, Vallejo, Cal.	.	.	The Atmosphere.
Hale Bliss, Chicago, Ills.	.	.	Potassium.
Edmund M. Bloomfield, Eaton, O.	.	.	Percolation.
Eugene Boise, Oberlin, O.	.	.	Glycerin.
Marvin T. Case, Attica, Ind.	.	.	Fluid Extracts.
Samuel Covert, Pontiac, Mich.	.	.	Glycerin.
Henry D. P. Cushman, Albion, Mich.	.	.	Potassium.
Asa L. Fox, Marshall, Mich.	.	.	Alcohol.
James M. Ford, Wabash, Ind.	.	.	Cinchona.
Edwin L. George, Dover, N. J.	.	.	Iodine.
Edgar L. Henning, Plano, Ills.	.	.	Distillation.
LeGrand H. Hollon, Sand Bank, N. Y.	.	.	Hydrargyrum.
Charles H. Hood, Ann Arbor, Mich.	.	.	Fluid Extracts.

John W. Jarvis, Erie, Pa.	Vegetable Astringents.
William F. Maltbie, Springborough, O.	Pharm. Education.
Lurnan G. Moore, Kinsman, O.	Ferrum.
James C. Neal, Marion, Ind.	Papaver Somniferum.
John F. Oakes, Rochester, N. Y.	Adulterations.
Robert G. Rex, Richmond, O.	Elimination of Elements.
William G. Rouse, Detroit, Mich.	Medicine and Pharmacy.
John A. Rutan, Libertyville, N. J.	Disinfectants.
Alphonso Sadler, Milburn Ills.	Cinchona.
Eugene M. Stanton, Rochester, Min.	Opium.

PHARMACY IN CALIFORNIA.—Through a copy of the *Daily Alta California* of San Francisco, of July 29th, sent by Mr. J. G. Steele, we learn that

“At a general meeting of the apothecaries of San Francisco, held last evening in the rooms of the Fourth District Court, City Hall, the following gentlemen, representing the retail drug trade, were present: Messrs. H. W. Bennett, James G. Steele, G. G. Burnett, Mayhew & Wenzell, Charles D. Zeile, F. Victor, Geo. H. Clapp, W. C. Miller, J. Barbat, J. W. Rule, C. F. Richards, S. M. DeSolla, John McCartha, Justin Gates, Edward McCann, Painter & Calvert, Edward Neuman, Charles E. Hinckley, Henry Adolphus, F. Gros, Wilson & Co., J. Tothill, J. W. Reynolds, J. L. Downing, E. J. Richards, W. H. Byran, J. W. Van Zandt, Jr., Edward Petibeuau, Craig & Holtz, Flynn & Abramson, J. K. Moor, C. Wilhelm & Co., R. W. Coffin, Chas. Roturier, V. Polastri and A. McBoyle & Co.

Mr. James G. Steele having called the meeting to order, Mr. Simpson was duly elected Chairman, and Mr. McBoyle, Secretary.

The Chairman made the following remarks, which were well applauded:

‘*Gentlemen*: We are assembled together for the purpose of organizing ourselves into a society. The necessity of such an organization is so apparent that I need scarcely allude to it. We claim, gentlemen, to be engaged in an occupation more responsible and more serious than any under the sun. In no business on the face of this earth is there so much opportunity for wrong doing, and none in which the public is obliged to rely so implicitly upon the honesty and good faith of its members. In this State, without any legislative restrictions, and having no Pharmaceutical Society, organization or college, it might be supposed, reckoning upon the all-prevailing human frailty, that many practices would intrude themselves into the business not considered either honorable or professional in the older societies elsewhere. We have to congratulate ourselves; however, that with as little incentive to study and the almost entire absence of an emulation to succeed in the scientific or higher branches, our occupation on this coast should maintain even the position it does. The primary objects of our organization will no doubt be to institute the largest professional skill, the greatest integrity in our dealings with the public, and the highest honor among ourselves, by a closer intercourse and communion. Let us cultivate amiable and kind feelings, and bear in mind that whatever professional envies exist among us belong exclusively to the shop, and have no room in our deliberations here.’

After some interesting debate, which was entered into with much zest by many present, the following Committee was chosen to draft a Constitution and By-Laws, to be submitted at the next meeting: Messrs.

Simpson, Steele, Calvert, Wenzel and Downing. It was also resolved that the present Chairman and Secretary be continued in their respective offices until a permanent organization could be effected and the various officers elected.

After various remarks from members present relating to a permanent association, the meeting adjourned to meet at the same place at 8 o'clock on Monday evening, August 9th."

It is probable that this meeting will result in an organization, and possibly in time to send delegates to the Chicago meeting.

BRITISH PHARMACEUTICAL CONFERENCE.—The circular issued by the general Secretaries, calling the Sixth Annual Meeting of this body, has been received, and before this number is printed the meeting will have taken place, on the 17th of August, under the presidency of Mr. Daniel Hanbury, at the old City of Exeter, in the South of England. We learn by the circular that it is proposed, as a new feature, to issue "an Annual Report on the Progress of Pharmacy, which shall include notices of all Pharmaceutical papers, formulæ, &c., published in the various pharmaceutical journals of Europe and America." This, if well carried out, will prove useful to the members, as by the present extreme exclusiveness of the English Pharmaceutical Journals, the pharmacy of the United States is almost unknown to the great majority of the pharmacutists of England, and the same is true of much that is Continental. Percolation and other processes of extraction are probably far better known to the mass of pharmacutists in the United States than to those of Great Britain, and in some other things—suppositories, for example—they would not retrograde by a more intimate acquaintance with the interior of Pharmacy in America.

The new pharmacy Act will have had some influence on the results of this meeting; bringing in a larger membership and greater interest in science. The circular says nothing about an exhibition coetaneous with the meeting, and the presumption is that for the present that feature will be dropped. We shall look with great interest for the proceedings in the next English Journals.

PHARMACEUTICAL INSTRUCTION IN PRUSSIA.—We learn through the *Pharmaceutische Zeitung* of June 19th, the following information concerning the study of pharmacy at the University of Jena. It would present a formidable beginning to our students if such a programme was presented at the outset of their studies. The young student has to apply to the director of the Pharmaceutical Institute, at present Prof. Dr. Ludwig, and present his testimonials of apprenticeship and clerkship; after a short examination he receives a testimonial of qualification which entitles him to matriculation, and this to all the academical rights of the students of this University.

The course is annual, and the students attend during the winter session lectures on, 1, pharmacy; 2, the first part of phytochemistry and chemical pharmacognosy; 3, the first part of analytical chemistry; 4, stœchiometry; 5, experimental natural philosophy; 6, botanical pharmacognosy; 7, zoology; 8, inorganic chemistry and stœchiometry; 9, pharmaceutical materia medica, (Waarenkunde). There are also held examinations and repetitions, and practical instruction is given in pharmaceutical and analytical chemistry under the supervision of the director and his assistant.

During the summer session the following branches are taught: 1, general chemistry; 2, the second part of phytochemistry and chemical pharmacognosy; 3, zoochemistry; 4, the second part of analytical chemistry; 5, forensic chemistry; 6, mineralogy and geognosy; 7, general botany combined with botanical excursions; 8, systematic botany and practical analysis of plants; 9, history of chemistry and pharmacy; 10, examinations, repetitions and practical instruction in the laboratory. The students may attend other lectures or leave out a portion of the above to attend at a third or fourth session.

After completing the annual course, the students have more time to devote to the laboratory, to examinations and repetitions; candidates usually enter well prepared upon the final examination after three sessions. Besides the use of the university library, the students will find rich and well selected collections of drugs, minerals, pharmaceutical and chemical preparations.

THE NEW AUSTRIAN PHARMACOPŒIA.—This new codex is written in the Latin language and does not contain the German names of the drugs and preparations. The gramme weight has been introduced in place of the ounce and pound, which must be regarded as an acceptable step towards a more general uniformity, since the Austrian apothecaries have had occasion to observe that the introduction of this weight into the pharmacy of north Germany has proved much easier than had been previously supposed.

In regard to the nomenclature, the collective divisions, such as roots, leaves, flowers, &c., have been discontinued; the name of the article is now given in alphabetical order, which is followed by the botanical name, natural order, habitat, and the officinal part of the plant, for instance: *Calamus*, *Acorus Calamus*, Linn., planta perennis, in Asia indigena, nuncin. . . . Aroideæ, Rhizoma (Radix Acori, Rad. Calami aromatici); this is followed by the description, and finally the preparations are mentioned into which the drug enters.

The nomenclature of chemical preparations remains unchanged, except that the names of the alkalies, alkaline and true earths have been substituted by the names of the elements; magnesia is magnesium hydricooxydatum.

About 40 new articles have been introduced, mostly chemicals; of drugs only guarana, helleborus viridis, kamala, thea. Nearly 250 articles have been dropped, among them acid. benzoic, hydrocyanic and succinic, ammon. carbon. oleos. and succin. oleos., about 20 distilled waters, bulb. colchici, castoreum, extract. cascaril., digitalis, rhei, valerian and others, morph. acet., moschus, vanilla, zinci valerian. No processes are given for the chemicals which are usually obtained from manufacturers, but the test for their recognition and purity are mentioned.

The work is concluded by a list of chemical reagents and utensils, and by tables on the comparison of weights, specific gravities, solubilities, strength of acids and alkalies, atomic weights and maximum doses. The index contains all the synonyms.—*Pharmac. Zeitung*, 1869, W. 56.

GELATIN-COATED PILLS.—Cauhape & Co., of New Lebanon, Columbia County, New York, have sent us a box of the gelatin pills of their manufacture. The pills are oval in shape, weigh about seven grains, and the label says each pill contains six grains of the compound cathartic pill mass of the U. S. Pharmacopœia, which is called a dose. On cutting a pill open the gelatin sack was found very thin but firm, and the pill itself made intentionally ovoid to facilitate swallowing; the interior retains its softness and the coating is warranted to remain *perfectly soluble* in any climate. We are not disposed to give any opinion about them that might be construed improperly. The coating of pills with gelatin was suggested by M. Garot in 1838 (see Vol. X of this Journal); and we used it for the purpose more than twenty-five years ago, hence these gentlemen can hardly patent the coating with gelatin, but only the particular process they employ. Besides, the best test is an assafoetida pill for the retentive power of the coating, as regards odors; and the iodide of iron pill for its excluding power for moisture and oxygen. A hasty opinion of such preparations is of no value except when intended to be used improperly. The specimen sent is made very neatly, and the pills retain their polish well.

DINNER AND TESTIMONIAL TO JOHN MACKAY, PHARMACEUTICAL CHEMIST, OF EDINBURGH.—When the Pharmaceutical Society was founded in 1841, its jurisdiction was made to include England and Scotland, Ireland being already provided through its Apothecaries' Hall. Owing to the remains of Scotch Nationality of feeling it was deemed best to include the Scotch in a separate sub-society under the name of the North British Branch of the Pharmaceutical Society, which had its separate officers and administration yet subordinate to the parent society, represented at Bloomsbury Square. For twenty-eight years the important and laborious office of Secretary has been held by Mr. John Mackay, to the entire satisfaction of his colleagues in Scotland and England. So sensible were they of this that for some time past it had been determined to present the Secretary with a substantial testimonial and a dinner. On the evening of

Thursday, the 28th of May, a party of about fifty gentlemen (says the Chemist and Druggist for June) assembled at the Douglass Hotel, Edinburgh, and presented to Mr. Mackay several handsome pieces of plate, the most prominent being a silver salver with the arms of the Pharmaceutical Society engraved upon it.

The Chair was occupied by Mr. H. C. Baildon. After the usual toasts the president made a speech, recounting the varied and valuable services of Mr. Mackay, to which the latter made an admirable reply, which, had we space, would do to reprint.

SECRET REMEDIES IN SPAIN.—Under this Caption the *Med. Press and Circ.*, May 12, informs us that the interdict which has heretofore excluded the importation and sale of quack and patent medicines in Spain has been removed by Minister Sagasta, by an order issued April 12th. This change of policy is said to have been adopted owing to representations made by the Apothecaries of Madrid, that the restrictions were prejudicial to the Empire, the public health and their own interests. In the order a "secret" remedy is defined to be one of which the composition cannot be discovered, or of which the formula has not been published. All the French and other patented galenical preparations will now have ingress, subject of course to heavy taxes for revenue.

OPIUM CULTURE IN INDIA.—According to the *Indian Daily News* (Med. Press and Circ., July 7,) the authorities in Bengal have determined to largely increase the culture of opium, consequent upon the proclamation of the Emperor of China prohibiting the cultivation of the poppy for opium in any part of the Imperial dominions. The abandoned agencies of Seetapore and Rohilkund are to be immediately reopened. "The fixed annual quantity of provision opium is to be 48000 chests, with, in addition, a reserve of 10000 chests to be gradually provided. The consequent necessary orders have been issued in time for the season of 1869—70. This looks very much as though the E. Indian government intended to ignore the Chinese custom house officials. Perhaps the treaty of Commissioner Burlingame with England may have some bearing in the case.

ROMAN CHAMOMILE.—A copy of the circular of Brückner, Lamper & Co., of Leipzig, dated July, announces that, owing to the bad weather, the prospect for a crop of Chamomile flowers is quite unfavorable, and unless a change occurred within two weeks it would be seriously deficient. The price it is believed will be 6 to 7 silver groschens per lb.

PHARMACOPŒIA ITALICA.—According to the Druggist of Jan. 11, Prof. Semmola has presented the project of an official Italian pharmacopœia to the Committee, who are drawing up a new Sanitary Code.

THE NEW TRIBUNE BUILDING, CHICAGO.—Some one has politely sent us an engraving of this fine building, and a printed description of the structure and its interior arrangements. Our space does not permit us to more than acknowledge its reception.

A Manual of Chemistry, theoretical and practical, by George Fownes, F.R.S., &c. From the tenth revised and corrected English edition. Edited by Robert Bridges, M.D., Prof. of Chemistry in the Philadelphia College of Pharmacy. With 197 illustrations. Phila.: H. C. Lea, 1869: pp. 857, 12mo.

It is a subject of general satisfaction among a large number of chemical readers, teachers, and students, that this standard treatise has at last received the revision it has so long needed, and that teachers using it as a text book can refer to it as up to the time.

Among the new matter the new views in relation to heat and light are fully noticed, especially as regards the development of heat by mechanical motion, and the discoveries incident to spectroscopic studies.

The new views regarding nomenclature which now obtain among continental chemists are applied to the oxides. Ozone is enlarged upon, and the occlusion of hydrogen noted, but the edition was printed before Prof. Graham's later views on the metallic nature of hydrogen were published. Dialysis and osmose are also fully noticed. Carbon follows hydrogen and nitrogen with the oxygen and hydrogen compounds. Sulphur, selenium, tellurium in a group are followed by boron, silicon and phosphorus.

The new views in relation to equivalent numbers, atoms and notation are fully discussed, and their bearing on the subjects following, require close study by all who have not been keeping up with the progress of chemical science since the last edition of Fownes' was published. The classification of metals according to their atomicity into six classes, called *monad*, *dyad*, *triad*, *tetrad*, *pentad*, and *hexad*, each of which includes two or more groups, is one of the novel features.

The organic bodies are arranged according to their composition, the organic series of carbon and hydrogen ranging first. They consist of 12 series and are far too complex to present a view of them in this notice. These are followed by the alcohols and ethers of modern chemistry; then come the organic or carbon acids; the aldehydes, and the ketones, a class of bodies derivable from the aldehydes.

Organic compounds containing nitrogen follow these, including the cyanogen and uric acid compounds; then the compound ammonias or amines, or artificial alkaloids, then the natural alkaloids. The metallic organic bases, the amides, and the unclassified organic bodies largely derived from the animal kingdom.

It will require increased attention on the part of students to follow Fownes in the new edition, for not only is it much extended, but much of it has been radically changed as regards position and notation.

Braithwaite's Retrospect of practical Medicine and Surgery. Part lix. July. Uniform American Edition. New York, W. A. Townsend and Adams, publishers, 1869: pp. 284, octavo. (Price \$2.50 per annum.)

The half-yearly abstract of the Medical Sciences. Being a digest of British and Continental medicine and of the progress of medicine and the collateral sciences. Vol. xlix. July, 1869. Philadelphia, Henry C. Lea, 1869: pp. 293. (Price \$2.50 per annum.)

These useful semi-annual visitors are again welcomed with their useful burthen of valuable papers and abstracts, brought together from a wide range of journals during the past six months in a permanent and convenient form,

The Family Adviser and Guide to the Medicine Chest. A concise handbook of domestic medicine. By Henry Hartshorne, A.M., M.D. Revised and enlarged. Philadelphia, J. B. Lippincott, 1869.

The adaptation of this little volume to the purposes indicated in the title, have been well endorsed by the necessity for a new edition so soon after that noticed in our number for Sept., 1868. Its conciseness renders it fit to carry in the pocket or valise, and will be useful to all travellers.

Fœticide or Criminal Abortion.—A lecture introductory to the course on obstetrics and diseases of women and children. University of Pennsylvania, session 1839—40. By Hugh L. Hodge, M. D. Philadelphia, Lindsay & Blakiston, 1869. For sale by the publishers. Price 30 cents.

This lecture, published twice before (1840, 1854) is now again printed with a prefatory note by the author. This is sufficient evidence of its merit and of its need at the present time.

Circular No. 2. War Department; Surgeon General's Office, Washington, Jan. 2d, 1869. A Report on excisions of the head of the femur for gun shot injury. Washington, Government printing office, 1869; pp. 141, quarto.

This report is made to the Surgeon General by George A. Otis, Assistant Surgeon, and brevet Lieut-Colonel U. S. Army. It is partly historical of the subject from the early part of the 18th century to the Crimean War. The cases detailed in the Report amount to 63, of which 5 were successful and 58 fatal. The author details briefly cases by other treatment and by amputation at the hip joint, and draws his conclusions in the final chapter.

The work is elegantly printed, and illustrated by several lithographs and numerous excellent wood-cuts, and reflects great credit on the Department as a contribution to the literature of surgery.

Journal of the Gynæcological Society of Boston. Devoted to the advancement of the knowledge of the diseases of women. Edited by Winslow Lewis, M. D., Horatio H. Storer, M. D. and George H. Bixby, M. D. Boston James Campbell, 18 Tremont street. Vol. i, No. 1, July, 1869. Monthly; pp. 64.

It is the object of this society to draw a clear line of distinction between obstetrics and the diseases of women, for the study of which the Gynæcological Society has been instituted. A physician may be a skilful accoucher and yet be unread in those obscure nervous diseases which afflict women and cause such untold suffering. Whatever light can be thrown on this study by the joint action of the earnest members of the Society it is proposed to publish in the *Journal of the Gynæcological Society*.

Hygiene in its relation to therapeutics, a paper read before the New York Medical Journal Association by Alfred L. Carroll, M. D., &c. New York, Turner and Mignard, 109 Nassau street. 1869; pp. 37.

Received from the author.

Treatment of Lachrymal affections. By Prof. Arlt, of the University of Vienna. Translated by permission of the author by John F. Weightman, M. D., Philada. Lindsay & Blakiston, 1869; pp. 30, with a lithographic plate.

The translator has done good service in giving this paper of Prof. Arlt to the American medical public in a form so serviceable.

OBITUARY.

M. J. E. BERARD, formerly professor of chemistry to the faculty of sciences of Montpellier, France, died on the 10th of June, at the advanced age of 80 years. He was born at Montpellier, Oct. 12, 1789. M. Berard occupied for many years the Chair of Chemistry in the *Ecole de Pharmacie* in his native city, one of the three schools of pharmacy in France. He was dean of the medical faculty and member of various learned societies, and at the same time owned a large chemical establishment, which gave him wealth and independence. He is described as a good lecturer and very successful as an experimenter.

PROF. H. E. DUSSANCE died at his residence, at New Lebanon, Columbia County, New York, on the 20th of June last. He was born in Paris, Dec. 25, 1829. Educated in chemistry as a student of Chevreul, he acquired great proficiency, and so good a reputation as to be appointed to one of the Chairs of industrial chemistry in the *Ecole Polytechnique* (*Jour. Mat. Med.* 220, July, 1869) Prof. Dussance occupied the position of Chemist in Tilden & Co's. Laboratory, and was one of the Editors of the *Journal of Applied Chemistry*, and the Editor of several other works.

THE
AMERICAN JOURNAL OF PHARMACY.

~~~~~  
NOVEMBER, 1869.  
~~~~~

MINUTES OF THE SEVENTEENTH ANNUAL MEETING OF
THE AMERICAN PHARMACEUTICAL ASSOCIATION, HELD
AT CHICAGO, Sept., 1868.

The Seventeenth Annual Meeting of the American Pharmaceutical Association met in the Hall of Lombard Block, in the City of Chicago, on the 7th day of September, at 3 o'clock, P. M.

In the absence of the President, Prof. Parrish, the meeting was called to order by Vice President Ferris Bringhurst, Prof. J. M. Maisch, Permanent Secretary, officiating.

The Chair appointed the following committee on credentials of delegates: E. H. Sargent, of Chicago, Henry Haviland, of New York, and James T. Shinn, of Philadelphia. After examining the papers submitted the Committee reported the following delegations:—

From the Massachusetts College of Pharmacy.—Samuel M. Colcord, Ashel Boyden, George F. H. Markoe, Isaac T. Campbell and S. A. D. Sheppard.

From the New York College of Pharmacy.—P. W. Bedford, Isaac Coddington, William Neergaard, A. W. Weissmann and William Wright, Jr.

From the Philadelphia College of Pharmacy.—James T. Shinn, S. Mason McCollin, Wilson H. Pile, M.D., William Procter, Jr. and Alfred B. Taylor.

From the Cincinnati College of Pharmacy.—R. T. Miller, George B. McPherson, William H. Adderly, William J. M. Gordon and William S. Merrell.

From the St. Louis College of Pharmacy.—William H. Crawford, J. C. Kirkbride, Francis H. Crawley, Ferdinand W. Sennewald, James McBride.

From the Kansas College of Pharmacy.—H. S. Greene, Augustus Breunert, Robert Parham, George Leis, Robert J. Brown.

From the Chicago College of Pharmacy.—Albert E. Ebert, Frederick Mahla, Ph.D., James W. Mill, George M. Hambright, Thomas Whitfield.

From the Saginaw Valley Pharmaceutical Association.—William Moll, L. Simoneau, Samuel S. Garrigues, Ph.D., J. E. Taylor and J. F. Street.

From the Alumni Association of the Philadelphia College of Pharmacy.—William C. Bakes, Edward C. Jones, William H. Raser, Richard H. Shoemaker and Charles L. Jefferson.

The Chairman of the Executive Committee reported the following list of applicants for membership, they being duly recommended in accordance with the Constitution :

James W. Blake, Visalia, Cal.	Albert A. Smith, Chicago, Ill.
Thomas J. Greatrex, San Francisco, Cal.	Rob't Thompson, Bloomington, Ill.
William A. Perkins, San Francisco, Cal.	A. C. Vanderburgh, Chicago, Ill.
James Topley, Vallejo, Cal.	James H. Wilson, " "
Joseph S. Fitzgerald, Washington, D. C.	Henry Schrader, Lafayette, Ind.
Rich'd G. Mauss, Washingt'n, D.C.	Chas. H. Bennett, St. Paul Junction, Iowa.
Weller Rothrock, Washing'n, D.C.	Nathan W. Hunt, Des Moines, Iowa.
Charles L. R. Sayre, Washington, D. C.	Joseph W. Harrop, Leavenworth, Kansas.
Calvin J. Fiske, Chicago, Ill.	Joseph T. Brown, Jr., Boston, Mass.
Charles H. Fitch, " "	William F. Horton, " "
H. D. Garrison, " "	George R. James, Schoolcraft, Mich.
Henry W. Heuermann, Chicago, Ill.	Henry Melchers, East Saginaw, Mich.
A. C. Ingalls, Waukegan, Ill.	Samuel H. Wagener, Muskegon, Mich.
Thomas N. Jamieson, Chicago, Ill.	Geo. H. Savery, Minneapolis, Min.
Newton A. Johnson, Galesburg, Ill.	Lucius E. Connor, St. Louis, Mo.
C. S. Jones, Chicago, Ill.	G. Mallinckrodt, " "
A. F. Murray, " "	O. G. Sherman, M. D. " "
T. H. Patterson, " "	Justin Steer, " "
David G. Plummer, Bradford, Ill.	Charles M. Jones, Great Falls, N.H.
Peter J. Singer, Peoria, Ill.	

Geo. W. Jacques, S. Amboy, N. J.	Henry C. Eddy, Philadelphia, Pa.
Henry M. Billings, New York, N. Y.	Peter P. Fox, " "
	James S. Robinson, " "
Henry G. Boyd, Westchester, N. Y.	Mitchell G. Rosengarten, " "
Benjamin Davis, New York, "	John Birch, Pittsburg, Pa.
Hampden Osborne, " "	George W. Kennedy, Pottsville, Pa.
M. L. M. Peixotto, " "	Herman C. Nick, Erie, Pa.
William H. Rogers, Middletown, N. Y.	H. C. Porter, Towanda, "
	Jacob H. Stein, Lebanon, Pa.
George J. Wenck, New York, N. Y.	Benjamin Lillard, Nashville, Tenn.
George Wright, " "	Edward S. Curran, Fond du Lac, Wis.
Alexandre B. Allen, Xenia, Ohio.	
H. C. Gaylord, Cleveland, "	Osma J. Griggs, Tomah, Wis.
Frank Harrington, Logan, "	Alfred Senier, Mazomanie, "
Louis A. Bates, Philadelphia, Pa.	Edward M. Wright, Prairie du Chien, Wis.
Henry K. Bowman, " "	

The Chair appointed Messrs. Edward C. Jones, of Philadelphia and Charles F. Fish, of Saratoga, tellers, who reported the unanimous election of the candidates.

The Secretary then called the roll, when the members present answered to their names, numbering 130.

The Chair having called for the Reports of Committees, the following were read by title and laid on the table for future action, viz. :

- Report of the Executive Committee, with that of the Permanent Secretary,
- " " " Committee on the Progress of Pharmacy.
- " " " Committee on Queries.
- " " " Business Committee.
- " " " Committee on a Law to regulate the Practice of Pharmacy.

The Committee on Unofficial Formulas reported progress, and desired to be continued for another year.

No report was received from the Committee on the Drug Market.

The report of the Executive Committee was now read by its Chairman, T. S. Wiegand, and that of the Permanent Secretary by that officer, and are as follows :—

The Executive Committee respectfully report that in the early part of the year they had published and distributed the 16th

volume of the Proceedings of our Association. The delay attendant upon its issue was greater than usual, although every effort in the power of the Committee was made to prevent it; the great variety and amount of matter has increased the size and cost of the book very considerably, the total expenditure on its account being nearly 1750 dollars. There has been received a number of applications for membership, which have been filed, and will be reported at the proper time; it is desirable that all desirous of joining our association should be informed that they are not entitled to any of the rights of members until they have perfected their membership by paying all their dues as well as signing the Constitution.

The only deaths that have come to the knowledge of the Committee are as follows:—

Henry E. Hill, who for several years past had been doing a fair business in Detroit, died on the 19th of November, 1868, from a pistol shot inflicted by himself whilst laboring under mental depression occasioned by his pecuniary reverses.

Louis M. Emmanuel, M. D., who died on Dec. 27th, 1868, in the 34th year of his age, of pleuro-pneumonia, having previously suffered from diabetes. He was regularly educated as a druggist, having graduated at the Philadelphia College of Pharmacy. Having studied medicine, he served in various positions in the Medical Department of the U. S. Army, till mustered out of the service, shortly after which he settled down in practice of medicine with his father, at Linwood. He became a member of our Association in 1857, and he is spoken of by his friends as being of an affectionate disposition and sincere in his friendships.

Edwin R. Smith, of Monmouth, Illinois, who has been a member of our Association since 1862, died of a pulmonary affection, under which he had been suffering for some years; he was a graduate of the Philadelphia College of Pharmacy.

A great deal of the interest of the report of our proceedings is due to the intelligent attention of Mr. Slade, who has reported for us for four successive years, each year with increasing advantage to the Association, and the Committee feel it their duty to make this acknowledgment.

Having on former occasions referred to the difficulties under

which our Association labors in consequence of its financial embarrassment, it is again noticed with the hope that some plan may be adopted which will enable those charged with the expenditure of its funds to meet the obligations assumed by our Association promptly; this matter will be so fully explained by the Treasurer that further remarks are unnecessary.

The Permanent Secretary reports the reasons for delay in publication of the 16th volume, and hopes the arrangements made in advance will enable him to present the 17th volume at an earlier day.

Fifteen resignations were published last year, and 21 members dropped from the roll who have neglected the payment of dues. The entire stock of proceedings and exchanges are deposited in a room of the new building of the Philadelphia College of Pharmacy, and is insured at the sum of \$2500.

The incidental expenses of the Permanent Secretary during the past year are itemed as follows: Postage stamps \$128.37; freight \$111.00; boxes \$7.05; paper, twine, nails, etc., \$4.50; portorage \$3.00; circulars \$11.50; insurance \$15.00; engrossing and filling certificates \$28.00; other expenses \$5.45; in all \$313.87.

The diplomas for the gentlemen elected honorary members of this Association at the last meeting were promptly forwarded by mail. Letters of acknowledgement have been received by the Secretary from all but three.

The report concludes with a list of the stock of Proceedings on hand, and the remark that the volumes for 1854 and 1856 are out of print.

The Permanent Secretary laid before the Association the letters of acknowledgement received from the honorary members elected at last meeting; also one from Professor Dr. G. C. Ehrenberg, of Berlin, addressed to the President, in reply to the address congratulating him on the 50th Anniversary of his Doctorate.

Pending the appointment of the Nominating Committee, the Chairman expressed his pleasure in having learned from the report of the Committee on Credentials, of the presence of delegates from two new Associations—the Kansas College of Pharmacy

and the Saginaw Valley Pharmaceutical Association. He extended to them a cordial welcome.

The following names were then given to act as the Committee on Nominations :

From the Chicago College of Pharmacy, Thomas Whitfield.

- | | | | | |
|---|---|---|---|----------------------|
| " | Massachusetts | " | " | Samuel M. Colcord. |
| " | New York, | " | " | William Wright, Jr. |
| " | Philadelphia, | " | " | William Procter, Jr. |
| " | Cincinnati, | " | " | George B. McPherson. |
| " | Kansas, | " | " | George Leis. |
| " | Saginaw Valley Association, | | | Samuel S. Garrigues. |
| " | Alumni Association, P.C.P., | | | William C. Bakes. |
| " | Association at large, by the President, | | | William H. |

Shuey, of Minneapolis; Charles H. Dalrymple, of Morristown, N. J., and N. Gray Bartlett, of Keokuk, Iowa.

The delegation from St. Louis College of Pharmacy not having arrived, it was ordered that its first delegate arriving be placed on the Committee.

The credentials of the delegates from the Maryland College not having been received, E. Walton Russell, one of them, was appointed to represent that College on the Nominating Committee.

Alfred B. Taylor, Chairman of the Business Committee, read his report, of which the following is an outline :

The Committee were charged last year to prepare rules of order for the transaction of business, and on considering the subject it was found that the wants of the Association were well met in a little volume called "Rules of Order—a manual for conducting business, etc., by B. Matthias, A.M.; Phila., 1869," which it is believed contains all the regulations, rules, and explanations necessary for our guidance, and a copy is herewith submitted.

The report recommends enlarging the duties of the Committee on Scientific Queries, and changing its name to "Committee on Scientific Papers and Queries," and that the duty of this Committee shall be to receive all reports of Standing Committees and all Scientific Papers intended for the Association, to designate which shall be read at length and which by title only, and prepare or have prepared synopses of such others as

it may deem desirable ; and also to arrange in connection with the Business Committee the time for their being read.

The report also presents suggestions in separate form of a remodeling of the Constitution, and recommends, to save time, that the whole be referred to a committee to report to this meeting whether or not the suggestions shall be entertained.

It being agreed to refer the recommendations of this report to a Committee, the Chair appointed Henry Haviland, of New York, Ashel Boyden, of Boston, and W. J. M. Gordon, of Cincinnati, to that duty.

William Wright, Jr., Chairman of the Committee preparing a law to regulate the practice of Pharmacy, reported verbally that the duty had been attended to, and printed copies of the proposed law were on the table for distribution to the members for consideration and criticism prior to its being taken up by the Association.

The Permanent Secretary read a letter from Mr. Gellatly, Chairman of the Committee on the Drug Market, explaining the causes of failure in presenting a report, offering to furnish the usual statistics in time for publication, and suggesting the appointment of a Committee on the Tariff.

The report of the Committee on the Pharmacopœia was now called up. The Chairman, Dr. E. R. Squibb, of Brooklyn, explained that his was an individual report, it having been understood that each member of the Committee would make a separate report, and that the report offered by him he alone was responsible for. Dr. Squibb then read the first part of his report on the Pharmacopœia, a document of 80 cap pages of MS.

Mr. Bedford, moved that when we adjourn we adjourn to meet to-morrow morning at 9 o'clock, which was carried.

The Chairman then proceeded to read the address of the retiring President, Edward Parrish.

The address, for which we have not space, expresses regret at the inability of the President to meet his fellow members in the great and growing metropolis of the North-west. The embarrassed financial condition of the Association is referred to the too tardy payment of dues by members. The valuable services of the Permanent Secretary are alluded to in terms justly complimentary to that excellent officer. The 16th volume of Proceedings is spoken of with approval. The Reports on

the Progress of Pharmacy and the Pharmacopœia were noticed, and in regard to the latter, the president urges that the report as embraced in the next volume of Proceedings be tendered to the National Convention of 1870, and says, "It seems appropriate also that some action should be taken at the present meeting, encouraging all the incorporated Colleges of Pharmacy to participate in the Convention and declare our fealty and our determination to aid in the maintenance of the National Standard. If to this could be added an expression of sentiment, such as would come with peculiar fitness from a meeting convened in the North Western Metropolis, favorable to the widening of the scope of the Pharmacopœia so as in itself to meet more completely the manifold wants of the pharmacist, it might have an influence with the highly conservative and eminently scientific gentlemen to whom the final revision will probably be entrusted. There is a growing need for authoritative standards for a large number of popular remedies, which, while they remain outside the pale of official preparations, tend to weaken the value attached to the Pharmacopœia by practical business men."

The subject of the tariff occupies several pages of the address, which advocates the appointment of a Committee to use its efforts to effect a reduction of the high duties on drugs in general, as a measure important to the interest of the community and not detrimental to the revenue.

The proposed draft of a law to regulate Pharmacy is advocated as embodying principles calculated to elevate and advance our profession, and to remedy many of the evils arising out of want of education and training. The president believes it will favor local organization, which he advocates as desirable in every district where members justify it. The report concludes with the statement that John Faber was duly authorized to attend the Congress at Vienna, as the representative of the Association.

The suggestions of the President's address were referred, at the suggestion of the Business Committee, to a special Committee, to which duty the Chairman appointed James T. Shinn, of Phila., Edward L. Milhau, of New York, and Dr. F. Mahla, of Chicago.

The meeting then adjourned.

Second Session—Wednesday Morning, Sept. 8th.

The Association convened pursuant to adjournment, at 9 o'clock, A. M., Vice-President Bringham in the Chair.

The minutes of the first session were read and approved.

The Business Committee offered the following, which was adopted:

Resolved, that the faculty of Rush Medical College and of the Chicago Medical College and the Medical Profession at large, be invited to be present at our sittings.

Mr. Charles A. Tufts, Treasurer, read his Report for the past year, of which the following is an abstract :

The Treasurer reports that all the bills coming to his knowledge due by the Association, have been paid, and there is a balance due the treasurer of \$29.63. There are 765 members names on his books ; of these 607 are permanent contributing members. The remainder, consisting of life members who have contributed ten years and decline to resign it, and those who will be life-members after a few years, more or less. The circulars in reference to the relinquishment of life-membership, directed by the Association to be sent to its members in 1867, have been sent to every member ; 463 relinquished the right, 91 declined, and 18, whilst declining to relinquish the right, will continue to contribute till further orders. 110 members did not reply to the circular, though sent several times, and the Treasurer has been put to much inconvenience and loss of time by this default, which is partly due, no doubt, to change of residence and other causes preventing the receipt of the notices. The expenses of the Association have greatly increased, as will be seen by the following :

In 1866, Proceedings cost \$1038.15, general expense \$552.45.

In 1867, " " 1508.32, " " 552.45.

In 1868, " " 1724.47, " " 1065.46.

The great increase in 1868 of the general expenses is due to accommodations for the Proceedings at the Hall of the Philadelphia College of Pharmacy, and freight to the State Libraries, which will not be incurred another year. The cost of the volume for 1868 is \$2.50, and our dues are \$3.00 per each member, which leaves but a small margin for the necessary expenses of the Association, hence it is very desirable that members should be prompt in paying their dues to avoid embarrassing the finances of the Association.

The Treasurer tenders his thanks to those members who have kindly assisted him during the past year.

On motion of the Business Committee, the report was accepted, and it was referred to an auditing committee appointed by the Chair, consisting of Messrs. Boyden, Bedford and Brown.

Prof. Procter, on behalf of the Nominating Committee, presented the following report of nominations for the ensuing year :—

For President,

E. H. SARGENT, Chicago, Ill.

For Vice-Presidents,

FERDINAND W. SENNEWALD,	.	.	St. Louis, Mo.
JOHN H. POPE,	.	.	New Orleans, La.
JOEL S. ORNE,	.	.	Cambridgeport, Mass.

For Treasurer,

CHARLES A. TUFTS,	.	.	Dover, N. H.
-------------------	---	---	--------------

Permanent Secretary,

JOHN M. MAISCH,	.	.	Philadelphia, Pa.
-----------------	---	---	-------------------

Local Secretary,

PROF. J. FARIS MOORE,	of Baltimore, [elected at last sitting.]
-----------------------	--

Executive Committee,

THOMAS S. WIEGAND,	Chairman,	Philadelphia, Pa.
WILLIAM WRIGHT, JR.,	.	New York, N. Y.
WILLIAM C. BAKES,	.	Philadelphia, Pa.
SAMUEL M. COLCORD,	.	Boston, Mass.
JOHN M. MAISCH,	<i>Ex-officio</i> ,	Philadelphia, Pa.

Committee on the Progress of Pharmacy,

F. MAHLA,	Chairman,	Chicago, Ill.
S. S. GARRIGUES,	Ph.D.,	East Saginaw, Mich.
G. F. H. MARKOE,	.	Boston, Mass.
EDWARD L. MILHAU,	.	New York, N. Y.
PROF. J. FARIS MOORE,	<i>ex-officio</i> ,	Baltimore, Md.

Committee on the Drug Market,

HENRY W. FULLER,	Chairman,	Chicago, Ill.
WILLIAM WRIGHT, JR.,	.	New York, N. Y.
THEODORE O. KALB,	.	St. Louis, Mo.
JOHN J. THOMSEN,	.	Baltimore, Md.
EDWARD S. WAYNE,	.	Cincinnati, O.

Committee on Queries,

ALBERT E. EBERT,	Chairman,	Chicago, Ill.
ISRAEL J. GRAHAME,	.	Philadelphia, Pa.
N. GRAY BARTLETT,	.	Keokuk, Iowa.

Business Committee,

ALFRED B. TAYLOR,	.	Philadelphia, Pa.
E. WALTON RUSSELL,	.	Baltimore, Md.
CHARLES H. DALRYMPLE,	.	Morristown, N. J.

The Secretary announced the arrival and presence of the delegation from the St. Louis College of Pharmacy.

A ballot being ordered for President, the Chair appointed Edward C. Jones, of Philadelphia, and Charles F. Fish, of Saratoga, tellers, who reported the unanimous election of Mr. Sargent for President for the ensuing year. The remainder of the ticket was then voted for, and the tellers reported the election of all the candidates.

The Chairman appointed William Procter, Jr., and William J. M. Gordon, a committee to conduct the President elect to the chair. Mr. Bringham then said, I have the pleasure of introducing to the Association, the new President, Mr. E. H. Sargent, of Chicago, when the President spoke as follows:

"I am unable to express the sensations which crowd upon me as I realize the position in which your kindness has placed me. Occupying this chair, made honorable by the eminent men who have preceded me, I trust the influence of their example will enable me to fill it without disgrace to the Association. I thank you for the great and undeserved honor you have conferred upon me, yet I have a painful sense of inability to discharge its high duties satisfactorily, even to myself. Unused as I am to parliamentary forms, and seeing around me those who have made illustrious their efforts to build up this Association, I can but fear that you have erred in your choice of a presiding officer, yet I shall rely upon the evidence of your kindness that you will aid me in properly discharging the duties of the office, promising my best efforts. I am happy to extend to you, in the name of the Chicago College of Pharmacy, and of the druggists of this city, a hearty welcome. We will do what we can to make your stay pleasant, and we hope this meeting may result in extending still further the benefits and usefulness of our honored Association. As this is your first meeting in the central portion of the Continent, we wish to remind you that the Great West lies beyond us, toward the setting sun, that it deserves your consideration, and we hope at no distant day will be favored by your presence. The older Eastern States have heretofore claimed the Annual Meetings as of right, to which we in future protest in good nature. The Young Giant "out West" is nearly of age, but is still growing, and will hereafter claim his full share of these privileges. We have at this meeting a much larger exhibition of articles from Europe than is usual, owing to the untiring efforts of your Local Secretary. It seems very desirable that such exhibitions of goods, not less than those of home production, should be encouraged, as thereby the interest of the meetings will be greatly enhanced and much useful information be acquired. To meet a large portion of the expenses of such exhibitions it will only be necessary to allow the articles exhibi-

ted to be sold at the meetings, which seems unobjectionable, and if generally known must increase such contributions very largely. We thank you for coming here, and hope that we may be soon again honored by your presence. When you leave us we trust that you will carry with you none but pleasant memories of this re-union and of your friends in Chicago."

The report of the Committee on the Progress of Pharmacy being called up, the Chairman, Dr. Fr. Hoffmann, read portions of the same. On motion, the report was accepted and referred to the Executive Committee for publication, and the suggestions contained therein to the Business Committee for consideration and report at a future sitting.

The President, at the suggestion of the Business Committee, appointed the following members as a committee to examine the specimens on exhibition, and report to a future session, viz., Thomas Whitfield, of Chicago, Paul Balluf, of New York, N. Gray Bartlett, of Keokuk, William H. Crawford, of St. Louis, and Henry J. Menninger, of Newbern, N. Carolina.

The consideration of the report of the Committee appointed to draft a Law relative to Pharmacy was, on motion, made the special order for to-morrow morning.

It was recommended that the various features of the law be privately discussed by the members, that all might be prepared to vote on the subject without much loss of time.

It was resolved, owing to the absence of many members in the exhibition room, that the doors of that room be closed during the sessions of the Association.

Dr. Squibb exhibited the specific gravity bottle alluded to in his report on the Pharmacopœia, and explained its construction and use. An accurate thermometer is suspended in the bottle, which through the stopper connects with a tube containing a scale correcting the capacity for different temperatures. In this way the bottle may be filled at any convenient temperature, and the specific gravity taken at the temperature of the room, while by rotating the bottle the thermometer will act as a stirrer and prevent stratification of the liquid. The capacity of the bottle was a litre, or about a quart. The inaccuracies of thermometers were also dwelled upon by the speaker.

Dr. Squibb finished the reading of his report on the Pharmacopœia, which, on motion, was referred for publication.

The Secretary now read the following list of delegates from the Maryland College of Pharmacy to this meeting: J. Faris Moore, John F. Hancock, E. Walton Russell, N. Hynson Jennings, and Henry A. Elliott.

The Secretary also read a communication from the Metropolitan Glee Club, of Chicago, inviting the members of the Association to participate in their excursion to St. Josephs, Mich., on Saturday next, Sept. 11th, on the steamer Orion. The communication was accepted, and the Secretary directed to return the thanks of the Association for the invitation.

The Auditing Committee reported that the Treasurer's account had been found entirely correct, and complimented that officer for the neatness and accuracy of his books, and for the interest he manifests in the finances of the Association.

On motion of the Business Committee, it was

Resolved, That a committee of three be appointed to take in consideration the time and place of our Annual Meeting; that all invitations be referred to them, and that they report the time and place, subject to the decision of the meeting.

An invitation from Dr. Miller to visit Rush Medical College was read and accepted, and the Secretary requested to acknowledge it.

The Association then adjourned till 3 o'clock, P.M.

Third Session—Wednesday Afternoon, Sept. 8th.

The Association met at 3 o'clock, P.M., President Sargent in the Chair. The minutes of the previous session were read by the Secretary and approved.

The President appointed Henry Haviland, of New York, Robert J. Brown, of Kansas, and Henry J. Menninger, of North Carolina, as the Committee on the time and place of meeting.

The committee appointed to consider the recommendations of the Business Committee relative to the Constitution and Laws, reported that the proposed changes would be inexpedient at this session, and suggested reference to a committee to report next year.

The suggestion of the Committee was adopted, and, on motion of Mr. Colcord, to consist of five members.

Dr. Squibb moved that the President, Secretary, and Treasurer be three members of this committee, which was carried, when the President appointed William Procter, Jr., and Samuel M. Colcord, to complete the committee.

The Chairman of the Executive Committee reported the following additional applications for membership, the applicants having complied with the requirements of the Constitution.

John E. Fitzgerald, Washington, D. C.	Albert H. Mann, Kansas City, Mo.
Walter P. Colburn, Peoria, Ill.	Ernest Dreher, Newark, N. J.
B. F. Miles, Peoria, Ill.	Isaac W. Jaques, " "
Charles Christian Fredigke, Chi- cago, Ill.	Theron W. Van Gieson, Newark, N. J.
O. F. Fuller, Chicago, Ill.	George H. Fish, Saratoga Springs, N. Y.
Joseph Hirsh, " "	James L. Knowles, Williamsburg, N. Y.
Samuel F. Poorman, Chicago, Ill.	Charles C. Matthews, Shippens- burg, Pa.
Jefferson E. Duncan, Boston, Mass.	Hugh H. Hampton, Memphis, Tenn
J. Thomas Leary, " "	George H. Jones, " "
Ottmar Eberbach, Ann Arbor, Mich.	

The President appointed Messrs. Ehrman and Jamieson as tellers, who reported the unanimous election of the candidates.

Dr. Squibb read a volunteer paper entitled "Notes on Rhubarb," and exhibited a number of samples of powdered rhubarb of different qualities, showing the influence on its apparent color when laid on blue and yellow paper. Several cases of rhubarb root of excellent quality were shown, one in which the pieces had all been bored and the defects removed, the borings from the whole case being shown to give an idea of the quality.

Dr. Squibb also read a volunteer paper contributed by Mr. F. C. Musgiller, on Collodion. He regards it as a mistake on the part of the British Pharmacopœia to have given to the flexible collodion, the kind most generally used, a compound name, "collodium flexile," whilst the contractile kind, which is little used, is simply called "collodium."

When query 1st, on the Origin, Culture and Trade in Rhubarb in China, was called up, the Secretary said, I have been informed that Mr. Lincoln has taken steps to get as much information as possible from China direct, but has thus far not re-

ceived it, and it is suggested that the query be dropped. Should Mr. Lincoln obtain the expected information he will present it as a volunteer paper to the next meeting.

Query 5, on a nondeliquescent Persulphate of Iron, accepted by Mr. Heydenreich, was not ready, his experiments so far not having proved satisfactory.

Query 8, on Glassware, was answered by Mr. Wiegand and referred for publication.

Query 9, on the Corks of Commerce, was answered by Mr. Bedford, by a written essay, illustrated by various specimens, showing the results of the several machines noticed in the paper.

Query 10, on the proper strength of Alcohol for tinctures of Gum Resins, was read by Alfred B. Taylor.

Query 11, accepted by Mr. Heydenreich, was replied to in a paper read by the Secretary, on drugs and preparations official in Germany, and recommended for adoption into the United States Pharmacopœia.

Mr. Markoe made some verbal remarks in reply to query 13, on our Commercial Asphaltums.

Dr. Squibb stated that Mr. Stearns had prepared no paper on query 14, relating to the emoluments and social advantages of pharmacy as a profession and trade, and that he desired to be relieved from answering it.

Mr. Markoe read a paper, in reply to query 16, on a substitute for camphor as a protection against moths and other insects.

The Secretary, Prof. Maisch, read a paper in answer to query 20, on the production of Lycopodium in the United States; another, in reply to query 30, on a pharmaceutical preparation from *Lactuca canadensis*; both of which were referred for publication.

Dr. Squibb stated that Dr. Duffield has been and still is very ill, so as to be unable to reply to queries 21 and 28.

Prof. Procter stated that he was not ready to reply to query 22d, on *Abies Canadensis*, which had been partly investigated, and it was continued for report next year.

Mr. Diehl of Louisville, in a letter to Prof. Procter, stated that he had been unable, owing to business changes, etc., from collecting the numerous data necessary to reply to query 23d,

relative to indigenous drugs, but that he hoped by next year to accomplish it. The subject was, on motion, continued to Mr. Diehl.

The Secretary read a letter from Mr. Jeannot, giving similar reasons for not replying to query 25, which was also continued.

Mr. Tufts stated that a letter just received from Prof. J. Faris Moore, of Baltimore, gave reasons for his absence, which was unexpected, and suggested that as the probable reason why no answer to query 24th was received.

The Secretary stated that Mr. Lancaster had been engaged on the reply to query 32, but no answer had been received. Mr. McCollin suggested that domestic affliction had probably interfered with this duty.

Alfred B. Taylor read a volunteer paper on the preparation of fluid extracts by percolation and without heat, by Mr. Campbell's process, which was illustrated with numerous specimens and residues. The paper was accepted and referred.

The President invited all members present at this meeting to assemble to-morrow morning at 8 o'clock, at Dearborn Park, for the purpose of having a photographic picture taken.

On motion, the Association adjourned till to-morrow morning at 9 o'clock.

Fourth Session.—Thursday Morning, Sept. 9th.

The meeting was called to order at 10 o'clock A. M. President Sargent in the Chair. The minutes were read by the Secretary and approved.

This being the time fixed for the consideration of the Law regulating Pharmacy, Prof. Maisch, to bring the subject forward, moved that the draft as presented by the committee be adopted.

[For copy of Bill see Editorial Department.]

Considerable difference of opinion prevailed as to the best mode of considering the bill, some deeming it best to consider it section by section, adopting or rejecting in course; others thought that the prominent principles or points upon which the bill is based should be each decided before proceeding to the details of the bill, for if the Association should approve or disapprove of these would the proposed bill stand or fall as the wish of this body.

Mr. Bartlett believed the bill bore unequally upon those in business and those qualified for it but in subordinate capacity, and that capital rather than intelligence was favored.

Prof. Maisch explained that this was only at the start, as it would be out of the question to make the law *ex post facto*, as all now in business have a legal right to continue.

Mr. Merrill doubted the propriety of exacting four years preliminary service from all who enter the business before graduating them. Persons of mature years and physicians preparing to abandon practice could prepare themselves in a much briefer period.

Some discussion here arose in reference to the propriety of adopting such a bill as the expressed wish of the Association to the State Legislatures.

Mr. Colcord disapproved of the bill being sent as the wish of the Association, but only as giving an idea of what will reach the wants of the public in case any Legislature requires a law.

Prof. Maisch here gave a history of the legislation for pharmacy in several of the State Legislatures during their last sessions. He believed it very desirable that this Association should give expression to its opinion in the form of a Law, involving the principles that should be in any good bill suited to the requirements of the public and of pharmacutists.

Mr. West, of Indiana, considered the proposed law quite impracticable and unsuited to the Western States, and that such laws could only be carried out where Colleges of Pharmacy exist to aid in their support.

Prof. Maisch believed Mr. West was mistaken in his estimate of the practicability of the bill. He had had much correspondence as Secretary, with the officers of several States and with the pharmacutists of those States, which convinced him that some such bill, modified to suit particular cases, would meet the wants of all the States.

Mr. Dietrich, of Ohio, thought the bill had better be taken up by sections. He was in favor of adopting a bill, and this bill if it could be agreed upon. His State had postponed action until this meeting should give expression to its deliberations in

the draft of a law. He therefore moved that the bill be taken up by sections, each section being read and discussed separately.

A division being called, the motion prevailed, 47 to 19.

Mr. Procter, before proceeding, wished to say a few words against considering the bill by sections, and in favor of first considering the principles upon which it is based. He thought, from the experience of the Philadelphia College, that much time would be consumed if we undertake to consider this law in this way. Let the features of registration, of qualification by education, the sale of poisons and the prevention of adulteration of drugs, be first thoroughly discussed and adopted, or rejected, and then let the bill be made to accord. Many members did not approve of the law including drug adulteration, preferring to leave that to be punished as other misdemeanors are at common law.

Mr. Taylor, of Philadelphia, thought the resolution to take up the bill by sections was a little premature, and that it was well to discuss the principles of the bill first.

Mr. Brown, of Kansas, doubted the possibility of framing a bill to suit all the States, and that it had better be left to each State.

Dr. Squibb said we had already decided to take up the bill by sections, and that the first thing was the preamble. He questioned some of the provisions of the bill, and objected specially to the clause preventing physicians from practising pharmacy under their diploma, believing they have such right. He believed a series of resolutions embodying the sentiment of the Association as to what points are needed to be accomplished by legislation would be enough without a formal bill.

Mr. Wright, of New York, said the Association had decided that a bill should be had by appointing a committee to frame one.

Dr. Squibb gave the Committee due credit for its labor, but believed the result was still the opinion of the Committee and not of the Association until adopted.

Mr. Coddington thought that, unless a law was proposed by this meeting, several States would pass laws which might be objectionable. He thought the time had come when apothec-

caries should have an influence in the legislation on pharmacy without compromising the interests of physicians.

Mr. Colcord would like to speak on the general merits of the bill, but could not discuss its sections.

Mr. West suggested a reconsideration of the vote to take up the bill by sections.

Mr. Brown moved the adoption of the preamble.

Mr. Taylor opposed this and advocated the adoption of the fundamental principles of the law before going further.

Mr. Procter coincided with this view, and suggested that the mover of the resolution to consider by sections would withdraw it to allow of that course.

Mr. Dietrich consented to a reconsideration of his motion, which being agreed to, the original motion to consider by sections was put and lost.

Mr. Procter then proposed that the Association should decide whether registration should be adopted as a feature of the proposed bill.

Mr. West understood the bill reported by the Committee was before us.

The President said the suggestion to consider first the principles upon which the bill is to be based is eminently correct, and would greatly facilitate the settlement of the question whether the bill reported by the committee will be satisfactory.

Mr. Shinn said if any member has a better basis upon which to found legislation than the registration of pharmacists, he hoped it would be produced now.

Mr. Procter again urged the decision of the question of what principles should form the basis of the bill.

Dr. Squibb believed registration was only a means to ascertain and secure qualification, and that the enunciation of our desire as an Association to have qualification the basis of all legislation for pharmacy would be sufficient.

Mr. Menninger moved that, "in the opinion of this Association, the registration of pharmacists is desirable in the various States of the Union, and that such registration be based on education." Before this was seconded it was again urged that Prof.

Maisch's motion to adopt the report as a whole was before the meeting. Mr. Maisch then withdrew his motion.

Mr. Taylor suggested that the proposition to consider qualification the basis of the law, with registration to ascertain and sustain it, be now adopted.

Dr. Squibb opposed registration, on the ground of its creating many political offices and office-holders, and thought that the Association should keep clear of proposing it. Let it be declared that we desire that pharmacutists should be required to possess legal qualification to practice, and leave the means to the legislators.

Mr. Procter stated that registration is being carried out very successfully in Great Britain, under the direction of the Pharmaceutical Society, which is recognized by Parliament as the agent for effecting registration and ascertaining qualification. It is not necessarily a political agency, though so proposed in the Committee's bill.

Mr. Colcord favored Dr. Squibb's proposition of a simple declaration.

Mr. Coddington urged the necessity of proposing a definite law, as, unless it is done, the legislators will enact laws that will be much more burthensome and oppressive. Some machinery is absolutely necessary, and he thought that of the bill probably as good as any that would be likely to originate with legislators.

Mr. Wright believed we should get on by taking a vote on the question of registration as the means of ascertaining qualification.

Prof. Maisch considered that the law proposed by the Committee would impose burdens on the practising pharmacist not before felt; and that those burdens are for the benefit of the public and not for the advantage of the apothecary.

Mr. Shinn believed it was evident that all members did not desire legislation, but the law proposed by the Committee is brought forward conditionally, viz. :—to meet the demand for a law on the part of the community. He therefore believed that the proposed law should be offered only in case it is necessary by the forcing of legislation upon us, and then to be offered for guidance.

Mr. Merrill thought it inexpedient to have any bill requiring registration, and believed, if adopted, it would become inoperative, he was opposed to it as oppressive. He considered that the law must act by compelling every apothecary to employ competent clerks, by making him responsible for the acts of these clerks when they are unqualified.

Mr. Ebert wanted to know what our courts would understand by qualification, if they have no standard to judge by.

Mr. Haviland proposed to move that all the clauses regarding registration be stricken out.

Dr. Squibb stated the difficulty of drafting resolutions as important as those now needed, in the hurry of business. He had prepared a sketch which he proposed now to read.

Resolved, That the draft of a Law presented by a Committee of the Association appointed for that purpose, be incorporated in the Minutes of the Association, as one scheme whereby the objects of the Association may be attained; and that as such it is placed on record for the use of the Legislatures of the different States of the Union, if they please to consult it; but it is also

Resolved, That the difficulties of constructing a proper form of law adapted to general use as such, and the impossibility of obtaining harmonious action in our own body is so apparent, that we are satisfied with enunciating the broad principle which in our judgment underlies most of the accidents and abuses which we aim to correct.

Resolved, That this principle is that lack of qualification in those who prepare and dispense medicinal substances, is the chief cause of the accidents and difficulties which occur, and that proper qualification and education should be secured by law.

Mr. Colcord expressed satisfaction with these resolutions.

Mr. Procter, while agreeing with the resolutions, would have been pleased if the Association could have gone further and expressed more specifically in a series of resolutions all the salient points of the bill.

Dr. Squibb then proposed that, if a majority of the Association approved the resolutions, the subject be postponed till the commencement of the afternoon session, when the resolutions, more carefully elaborated, could be laid before the meeting for its action. Agreed to.

Mr. Shinn, on behalf of the Committee appointed to bring

forward the subjects suggested in the President's address, stated that they had prepared a series of resolutions, which could be read and acted on separately, as the most direct way.

1. *Resolved*, That in view of the arduous labors involved, the salary of the Permanent Secretary for the ensuing year be increased to \$400, and that of the Treasurer to \$200.

Prof. Maisch wished to know where the money was to come from.

Mr. Colcord seconded the resolution, and expressed great pleasure that it had been brought forward.

Dr. Squibb heartily approved of the resolution, and hoped it would be made permanent instead of for the ensuing year only.

After several motions to render the resolution continuous and to increase the amount of salary were lost, the original resolution was adopted.

Mr. Shinn read the second resolution :

2. *Resolved*, That the Secretary be directed to forward to the President of the Decennial Pharmacopœial Convention, in May next, a printed copy of the Proceedings of this Convention.

Dr. Squibb seconded the resolution in order to bring it under discussion ; he was opposed to it, because the report on the Pharmacopœia of this year is only one of a series by the Pharmacopœia Committee, and hence the proceedings of this year would not represent the action of the Association ; he also considered it unnecessary, as at best it is only an act of courtesy, we having no right of representation.

The motion was then put and negatived.

Mr. Shinn then offered the third :

3. *Resolved*, That this Association earnestly recommend every incorporated College of Pharmacy in the United States to send delegates to the next Decennial Convention, prepared to present the views of their respective Colleges on the revision of the Pharmacopœia.

Which was adopted.

Mr. Shinn's, next resolution regretted that the Committee on the Drug Market had failed to prepare a report, and asked that the rules be suspended to permit the Committee to prepare statistical tables in time for the Proceedings.

After some discussion the resolution was rejected.

Mr. Shinn next presented the following :

Resolved, That a committee of three be appointed by the President of this Association to confer with the Government in regard to the tariff on drugs, should occasion for it arise.

Mr. Colcord seconded the motion in order to oppose it ; he considered the question of the tariff a political one, on which the members of the Association differ greatly, and he did not think we should have much influence.

Dr. Squibb and Mr. Shinn took the same view, and Mr. Haviland spoke in the affirmative. The President read a note from the Chairman of the Committee on the Drug Market, favoring the resolution, which was then put and lost.

The next resolution suggested the appointment of a Committee to present the prepared Pharmacy Law to the several Legislatures. This being premature, the resolution was withdrawn by Mr. Shinn.

The President read a letter from Mr. Fuller, declining to serve as a member of the Committee on the Drug Market.

On motion of Dr. Squibb, the declination was accepted and the vacancy referred to the Committee on Nominations. Carried.

The Business Committee called for the report of the Committee on Photographs appointed last year.

Mr. Bedford stated that Mr. Lincoln, the Chairman, had requested him to report verbally that about 100 photographs had been collected, and it was very desirable to extend the collection. He therefore invited all who had photographs with them and had not contributed to hand them to Mr. Shinn or himself.

Invitations were received from Hovey & Heffron to visit their art gallery, and from D. B. Shipman to visit his white lead works, which were accepted and directed to be acknowledged.

The Executive Committee now proposed the following candidates for membership. Messrs E. C. Jones and W. C. Bakes, acting as tellers, who reported their election.

Chas. Wm Gracely, of Chicago, Ill.	S. H. Douglass, Ann Arbor, Mich.
John F. Street, Bay City, Mich.	Horace Burrough, Baltimore, M.D.
Jos. E. Anderson, Mare Island, Cal.	J. R. Chapman, Detroit, Mich.

Adjourned to 3 o'clock this afternoon.

Fifth Session—Thursday Afternoon, Sept. 9th.

The meeting was called to order, President Sargent in the Chair.

The minutes of the Fourth Session were read and adopted.

Dr. E. R. Squibb offered the following motion, to be added as a preface to his Report on the Pharmacopœia :

That in the reference of his report on the Pharmacopœia to the Publishing Committee for publication in the Proceedings, the report be prefaced by the distinct statement that the Association, in publishing the report, does not endorse the judgment of the reporter in his recommendation to dismiss so many articles.

After some discussion in reference to this note, it was agreed to.

Dr. Squibb now read the following resolutions, intended to express the sense of this meeting in reference to the subject of legislation for Pharmacy :

1. *Resolved*, That the draft of a law to regulate the practice of Pharmacy, proposed by the Committee of the Association appointed for that purpose, be accepted and published in the Proceedings of the Association, as being one method whereby the objects of this body in regard to that subject might be attempted, and that as a method which embraces many useful details, arranged with great care and labor, it is recorded and published as well adapted to be useful to the Legislatures of the different States of the Union whenever they may see fit to respond to the earnest desire and call of this Association and of the community at large for enactments upon this subject.

2. *Resolved*, That the difficulties of constructing a form of a law proper to be endorsed and recommended by this Association for general application in all the States, are such that we must be satisfied with enunciating the broad principles which in our judgment should direct all legislation upon this important subject.

3. *Resolved*, That we see with alarm and regret the rapid increase in the number of accidents which occur from mistakes and mismanagement in dispensing medicinal substances, and that we earnestly desire to see these casualties checked and controlled.

4. *Resolved*, That we regard the ignorance and irresponsibility of many who engage in the practice of Pharmacy without proper qualification as the principal cause of such casualties.

5. *Resolved*, That a proper degree of education and qualification should be secured by law, and that all proper measures for educating and qualifying persons for duties so important should receive more encouragement and protection from the Law than they have hitherto done.

6. *Resolved*, That the report of the Committee embracing the proposed draft of a law, of the action had in this Association upon that report, and of these resolutions, be printed in pamphlet form, and that ten copies be sent to the Governors of the different States of the United States.

Dr. Squibb proposed that these resolutions should be taken up *seriatim*, and his view was agreed to.

The first resolution was then adopted.

Mr. Wright, of New York, Chairman of the Committee on the Drug Law, spoke at some length, giving a history of the previous action of the Association relative to the bill. He considered the resolutions of Dr. Squibb as ignoring the question of registration, which is the prominent point of the bill, which they virtually extinguished and laid on the shelf.

Mr. Colcord thought the Association competent to deal with the subject before it in any direction, and he approved of the resolutions as embodying the sense of a majority of the members.

The *second*, *third* and *fourth* resolutions were then adopted.

Mr. Merrill very much doubted the truthfulness of the fourth resolution. He believed that accidents happen more from carelessness and inattention than from ignorance, and that they occur more frequently with those who know better than with the really ignorant; nevertheless he believed that the proportion of accidents now is not greater than formerly, and that it is the habit of newspapers to notice them more than formerly, and the rapidity of telegraphic communication gives the impression of a more numerous occurrence of these accidents.

The fifth resolution was then adopted, and the sixth, relative to sending the law and resolutions, was, after some discussion, also adopted, it being amended to read, after the word Governors, "and the Speakers of the Legislatures," &c.

The Secretary informed the meeting that he had just received from the Montreal Chemists' Association a draft of a law which they propose to recommend for enactment in Canada. It appears, like our own, to be based on the English Law.

The Business Committee, to whom the Report on the Progress of Pharmacy was referred for consideration, reported that the suggestions of Dr. Hoffman appear to the Committee worthy of the careful consideration of the Association, and offered the following resolutions:—

Resolved, That the Committee on the Progress of Pharmacy shall consist of three members, who shall be elected every third year, to serve for the period of three years, and that the subjects upon which they report shall be divided into three parts, one part of which shall be reported on by each member of the Committee.

Resolved, That the report of this Committee, in addition to being printed in the Proceedings of the Association, shall be published separately in book form.

The President. If there is no objection they will lay over until next year.

Mr. Haviland, on behalf of the Committee on the time and place for the next annual meeting, reported that they recommend Saratoga Springs, New York, on the second Tuesday of September, 1870.

Mr. Maisch desired to know the reasons that induced the Committee to depart from the usual course of meeting in large cities.

Mr. Haviland replied that it was to break up the habit of causing expensive entertainments to be given by the members of the place visited, and that of electing the President from the place of meeting when another member might be more desirable.

Mr. Procter asked whether the report of the Committee was final or subject to the decision of the meeting?

Mr. Haviland. The meeting has the decision.

Mr. Tufts had just received a letter from Baltimore reiterating its invitation to meet there next year.

Mr. Colcord moved that when we adjourn we adjourn to meet at Saratoga Springs, and advocated the measure for the reasons given by Mr. Haviland.

Mr. Procter opposed the motion, and hoped we would meet somewhere South. We had an invitation from Baltimore last year and this; he thought the argument against large cities not sound, and would rather meet in Richmond, Va., than at Saratoga Springs.

Mr. Menninger, of N. Carolina, advocated Saratoga for the same reasons given by Mr. Colcord, and doubted the propriety of going South next year.

Mr. Brown, of Kansas, advocated Saratoga on presidential grounds, that that officer should be taken from the Association at large.

Mr. Ebert agreed with Mr. Brown's view, and said it was the custom of the British conference to elect their presidents regardless of locality and solely on merit. [So far, they have all been taken from London.—EDITOR.]

Dr. Squibb thought members had overlooked the fact that the chief reason of the migratory character of the Association was to stimulate pharmacy at the places of meeting, and this could not be done if the number of pharmacists there was small; besides it was now usual to hold exhibitions for the same object. He approved of the plan of not accepting expensive entertainments, and of the Association paying its actual expenses.

Mr. Haviland said at the season proposed the hotels at Saratoga would be but thinly occupied, and it is very accessible, and it is probable that board would be lower.

Mr. Hambright, of Chicago, advocated going south and trying the experiment of paying our way there and gathering our old southern members and others into the Association.

Mr. Procter would be much pleased if the members could be induced to go to Baltimore, but if they cannot, it would be doing pharmacy in the South a great good if we were to agree to meet in Richmond, and pay our way, so that no expense would accrue to the pharmacutists there.

Mr. Maisch said there was not a member of the Association there to appoint as Local Secretary, Fredericksburg and Alexandria being the nearest.

After various opinions *pro* and *con* regarding the climate etc. of the South in September, Dr. Squibb suggested that the meeting be called for Washington, D. C., in May next, when the Pharmacopœia Convention and the American Medical Association meet.

Mr. Haviland thought it a good suggestion, and, on motion of Mr. Colcord the subject was postponed until Friday morning.

Dr. Weller, of Chicago, read a paper on weights and measures.

A motion was made to refer it to the Publishing Committee.

Prof. Maisch asked if the paper was not essentially the same in principle as that of Mr. Taylor, read to and published by the Association in 1859.

Mr. Taylor. They are exactly the same.

Mr. Maisch doubted the propriety of printing it.

Mr. Taylor thought it might go to the Executive Committee with discretionary power, which was agreed to.

The Business Committee offered a printed paper by Mr. E. Dubois, of the U. S. Mint, at Philadelphia, to be read as embodying some new views on weights and measures, but owing to the pressure of business it was postponed.

Mr. Procter read the report of the Committee on Queries, which was accepted, and is as follows:

The Committee on Queries report the following list for the ensuing year, with the names of those who have accepted them for examination:

1. What is the medicinal value of the portion of Socotrine Aloes left undissolved by water? And does it contain Aloin in appreciable quantity?

Accepted by Louis Strehl, of Chicago.

2. What is the best, simple and practical method or arrangement for retaining the Ammonia strength of Carbonate of Ammonia in the dispensing bottle or jar?

Accepted by Ambrose Smith, of Phila.

3. Coffee in one or another form has been recommended as an anti-toxic, as a deodorant, and as a means of masking saline bitterness. To what extent are these qualities possessed by Coffee, and what conditions are most favorable to its action?

Accepted by D. L. Dyson, of Bloomington, Ill.

4. What is the mode of action of "Insect Powder," the flowers of Pyrethrum, Caucasicum or Roseum, as an insecticide? And is there an American plant that possesses a like power?

Accepted by S. S. Garrigues, of Saginaw, Mich.

5. Eupatorium Perfoliatum, an examination of its proximate principles, especially that to which its bitterness is due.

Accepted by Joseph Hirsh, of Chicago.

6. What is the easiest and most practicable method of isolating Glycyrrhizin; to what extent does it possess the power of masking bitterness; and what is its mode of action?

Accepted by Joseph Hirsh, of Chicago.

7. What is the best and most eligible liquid form for the preparation and administration of Guaiac Resin?

Accepted by James T. Shinn, of Phila.

8. The relation of Mannite to Glucose in composition is very close. Can Mannite be prepared artificially, and if so, how? And has it the same physiological properties?

Accepted by Joseph Hirsh, of Chicago.

9. What is the actual influence of Soap on the Resin of Scammony, and on the Resinoid Matter of Colocynth and Aloes in the compound extract of Colocynth when the whole are dissolved together in diluted alco-

hol, and is this influence favorable to the medicinal power and value of the preparation? *Accepted by Prof. G. F. H. Markoe, of Boston, Mass.*

10. Is not the proportion of Acetic Acid used in the process of the U. S. P. for Acetic Extract of Colchicum too large? And to what extent may it be reduced? *Accepted by Edward C. Jones, of Phila.*

11. It has been proposed to substitute Glycerin for Sugar as a solvent and antiseptic in Fluid extracts. Does this ingredient in quantity effect their medicinal power in any way?

Accepted by W. J. M. Gordon, of Cincinnati.

12. Pepsin is valued for its medicinal power in connection with disordered digestion. What are the best sources of, and what the most available process for the preparation of it for medicinal use and for, the cuisine.

Accepted by S. Mason McCollin, of Phila.

13. The cold infusion of commercial Wild Cherry Bark sometimes varies considerably in color. Is this due to the time at which the bark is collected, or to what other cause?

Accepted by Joseph L. Lemberger, of Lebanon, Pa.

14. What are the arguments for and against a change of weights in the United States Pharmacopœia, and especially as regards the adoption of Avoirdupois or Metrical Weights by that authority?

Accepted by E. L. Milhau.

15. What is the present state of the Foreign Opium trade of the United States, and to what extent is it influenced, if at all, by the culture of the Poppy and the domestic production of Opium?

Accepted by P. W. Bedford, of N. Y.

16. An essay on Filtering Papers and Filters with general remarks on the important branch of Practical Pharmacy in which they are employed.

Accepted by Joseph Hirsh.

17. What is the true power of Camphor as an insecticide? Does it destroy insects already existing in clothing, or does it merely act as a preventive by its odor?

Accepted by Prof. G. F. H. Markoe, of Boston, Mass.

18. Does Cassia Marilandica contain a glucoside principle analagous to that found in Alexandria Senna, by Dragendorff & Kubley?

Accepted by Joel S. Orne, of Cambridgeport, Mass.

19. Gillenia trifoliata. What process will isolate its emetic principle and what are the characters of the latter?

Accepted by Albert E. Ebert, of Chicago.

20. What is the present condition of the Honey trade in the United States, domestic and foreign?

Accepted by C. F. Stacy, of Charlestown, Mass.

21. What is the best antidote and treatment for Poisoning by Cyanide of Potassium that can be kept ready and used promptly?

Accepted by Louis Strehl, of Chicago.

22. Peppermint is largely raised in Ohio, New York and Michigan, for distillation. What is the present state of this industry as regards extent of production and quality, especially in reference to improvements in purity, based on care in culture?

Accepted by Robert S. Drake, of Piqua, Ohio.

23. What is the most reliable process for obtaining the Tartrate of Potassa that will be ready and uniformly soluble?

Accepted by Edwin Mallinckrodt, of St. Louis, Mo.

24. It having been shown by Charles Bullock, that Veratrum Viride contains no veratria, (the source of that alkaloid for commerce being the fruit of *Asagroeae officinalis*), it is queried, does the veratria of commerce exist in Veratrum album, or has some other alkaloid been confounded with it?

Accepted by S. Mason McCollin, of Phila.

25. What is the best process for Assaying Opium, to determine its morphia strength, suited for adoption into the U. S. Pharmacopœia.

Accepted by Wm. Procter, Jr., of Phila.

An invitation to visit the laboratory of practical chemistry of the Chicago Medical College was accepted with thanks.

Prof. Markoe read an answer to query 6th, relative to testing narcotic extracts.

This paper elicited some discussion as to the merit of Mayer's test for alkaloids, by Dr. Squibb, Prof. Maisch and Mr. Markoe.

Mr. Taylor read a paper by D. S. Dyson, on Oxalate of Iron.

Mr. Massot read a volunteer paper by Theo. Fay, relative to the Profession of Pharmacy, which was referred to the Executive Committee.

Mr. Van Sweringen read a volunteer paper entitled "Pharmacy," which was referred to the Executive Committee.

The Secretary read an answer to Query 17, by Joseph L. Lemberger, on substituting indigenous Aromatics for Cardomoms in officinal preparations.

Also a volunteer paper by P. C. Candidus, on Compound Elixir of Taraxacum as the best vehicle for Quinine.

Also one by James T. King, on the Deposit in Tincture of Rhubarb.

Query 31 was answered by Isaac W. Smith, of Philadelphia.

At this juncture Dr. Squibb remarked that he had a pream-

ble and resolutions to offer, which required more courage than he possessed, and hoped the members would make due allowance for any feeling he might manifest in reading them.

Whereas, It must be an object of this Association, in common with all others of similar character, to oppose what is wrong within the sphere of its action and influence, and

Whereas, The Constitution of the Association asserts that its objects are to elevate the standing, increase the knowledge, oppose the adulterations, and suppress the empiricisms of Pharmacy, and

Whereas, A member of this Association has put forth a nostrum called "Sweet Quinine," which contains no quinine, and is therefore a fraudulent imposture, therefore

Resolved, That Mr. Frederick Stearns has, in this so-called "sweet quinine," and in the advertisements concerning it, violated the sense of moral rectitude of this Association, and has violated its Constitution and the general purposes of its organization.

Resolved, That for these offences, Mr. Frederick Stearns, of Detroit, be expelled from this Association.

The President remarked that he should be sorry to put the question on such a resolution without having heard more expression from the members.

Dr. Garrigues, Mr. Hambright and others, advocated postponement until the morning session, which was agreed to.

Prof. Maisch here announced his intention to resign the Permanent Secretaryship, to take effect at the beginning of the session of 1870, giving as a reason that the duties had become so extensive and occupied so much time, that in justice to himself it was utterly impossible for him to retain them. For the latter reason, however, he had fixed the time for next year, so that the Association would have a year to select his successor.

Mr. Procter desired to know whether the resignation would exclude his acting at the next meeting; to which Prof. Maisch replied that it would, (meaning probably after the election of officers at the second session).

The meeting then adjourned to Friday, Sept. 10th, at 9 o'clock, A. M.

Sixth Session—Friday Morning, Sept. 10th.

The Association met at 9 o'clock, A. M., President Sargent in the Chair. The minutes were read and approved.

The time and place for holding the next meeting was taken up, when the Secretary read the following telegram, dated yesterday :

"The Maryland College of Pharmacy extends a cordial invitation to the American Pharmaceutical Association to meet in Baltimore in 1870."

Signed,

J. J. SMITH.

The resolution before the meeting at the time of postponing the subject, was that the next meeting be held at Saratago Springs, N. Y.

Mr. Tufts offered an amendment to substitute Baltimore, which was carried, and the amended resolution adopted, so that the Association will adjourn to meet in Baltimore on the 2d Monday of September, 1870.

The nominating Committee reported that Mr. Henry W. Fuller agreed to serve as Chairman of the Committee on the Drug Market, and had withdrawn his declination.

Mr. Taylor read a letter from D. C. Robbins, of N. Y., to H. W. Fuller. Referred to the Executive Committee.

The resolutions offered at the fifth session, concerning Mr. Stearns, were called up and read. (See page 507.)

A member suggested that as Mr. Stearns was present, it was proper for him to make a statement in regard to the matter.

Mr. Stearns then came forward and said that he felt it was due, not only to himself but also to the Association, that he should explain where he stood in the matter charged against him. It was true that he had put a speciality in the market under the trade name of "Sweet Quinine," which is made of cinchonia. He felt justified in doing so from two motives; first pecuniary gain to himself; second a belief in the efficacy of his medicine. He then, to explain the matter, gave a statement in reference to the history of the introduction of quinine by Pelletier, which, in his opinion, caused that alkaloid to have an undue degree of consideration in medicine and turned observation away from cinchona, which had priority of discovery. Believing, therefore, that cinchona possessed the same kind of curative power and qualities as quinia, he thought it would be a good thing to bring it into use and thus render available a large amount of a useful agent which fashion prevented from being used as it deserved. To effect this purpose, the bringing of cinchonia into use and thus deriving pecuniary gain, he had availed himself of the name of Quinia by inference in adopting the trade name "Sweet Quinine." This constituted his offence; he considered it an error of policy, rather than

of principle, and not deserving of the severe penalty expressed in the resolutions. Each must judge for himself, from his own moral standard, in such cases; whatever the Association did he would have to bow to, however serious the result might be to his feelings and interests. He could not feel that he deserved any such extreme action as these resolutions call for, and, if carried out, his sense of justice would be outraged; he thought the members could cause their action to take a milder and more charitable course.

Mr. Colcord asked Mr. Stearns if he proposed to continue his present course, or whether he intended to abandon it, acknowledging it as an error against the Ethics of the Association?

Mr. Stearns replied that what he had done he had done; he wished to be judged by that. That was all the Association could reach. His future acts would speak for themselves. He went into the business reflectively and stood square on the position then taken. He might have resigned, but that would have been cowardly.

Mr. Ebert read a letter written by Mr. Stearns to a Cincinnati Journal, which contained views contrary to the Code of Ethics.

William Wright, of New York, thought that the resolutions of expulsion were too severe for the offence, and offered the following as a substitute, therefore:

“Resolved, That in the manufacture and manner of advertising the article known as Sweet Quinine, Mr. Frederick Stearns has committed a serious offence against the Ethics of this Association, and is deserving of its severe censure.”

Mr. Shinn thought the Association should seriously consider which of the two courses would best subserve its ends. If it is to have any future influence with the Medical and Pharmaceutical Professions and the community at large, it must set its face against any attempt to deceive or mislead either one or the other. In his estimation a vote of censure would not be as effectual as one of expulsion, and though very distasteful to all members, it is due to the public that we should set aside feelings and vote on principle.

Mr. Colcord, of Boston, thought the case of Mr. Stearns should be dealt with as a matter of principle. He had been a member of the Committee on the Constitution. He stood there to urge the penalty of those laws. He was a personal friend of Mr. Stearns. To inflict a penalty on him would be like plucking out his own right eye. He had great sympathy for Mr. Stearns, but the Ethical Code of the Association must be upheld. If we are not strong enough to do it, we had better cease to exist as an Association. There are thousands who lie sick and dying and who demand pure drugs. Mr. Stearns, as he says, went into this matter knowingly. He was always an advocate for Ethics. I would have the Association to do by him as it would do by me. It is a question of principle.

Mr. Procter said that Mr. Stearns had had an opportunity to defend his course in this matter. He thought Mr. S. was sincere in his statement that he had not broken the moral law but had made a mistake in policy, and had gone counter to our Ethical rules. This certainly showed a moral obliquity for which he could not account. The act of Mr. Stearns had certainly wounded the virtue of the Association in one of its best members. It must be healed, even though it be necessary to resort to the knife and remove the offending member.

Mr. Wright, of New York, wished to know if expulsion was resorted to in this case, how long the Association would exist. How many of its members make their preparations fully up to the standard. Who was there that did not offend more or less?

Dr. Squibb was asked to express his views, and replied that he could not discuss the subject; he had no desire or heart to enter into the matter. He had no reply to make to Mr. Stearns, who he honored for his frankness and openness. We would do well to remember a lesson of the Highest authority; "Let him who is without (this) sin among you first cast a stone."

Mr. Gilmore thought the use of the words "Sweet Quinine" as a trade mark unobjectionable. If quinine was wanted it ought to be asked for, and if we used sweet quinine we should know what it was first, and not expect it to be bitter quinine.

Mr. Menninger moved that the vote be taken by ayes and noes.

Mr. Colcord moved to amend the motion by calling the delegations of the Colleges and Associations first, which was carried.

Mr. Colcord also moved that the Chair order that all the members in the Hall should be present when the vote was taken. Carried.

Whilst those members in other parts of the Hall were being gathered, a general discussion occurred for and against the resolution of censure.

Mr. Bakes thought that whilst the sale of liquors over the soda-water counter by some members was suffered, he could not vote for the expulsion of Mr. Stearns.

Mr. Menninger stated that it had been the aim of the Association to raise the Standard of Pharmacy. Whatever truth there might be in this statement of Mr. Bakes, he did not believe the cases parallel, and "that two wrongs cannot make a right." If there was virtue in the Association, a violation of its Ethical Code called for expulsion. A man to be respected must respect himself; and so with this Association in its relation to the community, it must uphold its Code of Ethics; this had been fully and seriously violated. If we claim a high standard before the community, there is but one remedy and that remedy is expulsion.

Mr. Stearns wished it understood that he was only to be judged for the past. He had no promises to make for the future. He might have resigned, but that would have been cowardly. He wished the Association to act on the past; the future would take care of itself, and urged members not to act precipitately.

Mr. Balluf said if Mr. Stearns admits to have violated the Constitution and the Code of Ethics, there should be a way left for repentance and return to Mr. Stearns, but if he goes on, then let expulsion follow.

Mr. Hirsh thought the error of Mr. Stearns a nominal one, and that all would come right if he would change his "trade mark" to that of "sweet cinchonine."

Mr. Haviland believed it very important to proceed calmly and deliberately, and in view of the statement made by Mr. Stearns and Mr. Balluf, he would advise postponing the decision until the next annual meeting.

Mr. Tufts advised immediate action as against postponement, but thought the offence of Mr. Stearns could be met without driving him from among us; would not an expression of severe censure be sufficient punishment? His confidence in Mr. S. was such that he believed he would get himself out of the entanglements of this thing and do right.

Dr. Squibb said that if he had had no higher motive than the punishment of Mr. Stearns, these resolutions would never have been before the Association.

Mr. Bringhurst arose to say that he had hoped Mr. Stearns would have placed it in his power to have voted against the resolutions, by making some acknowledgement of error with guarantee for the future. As the matter then stood he deemed a vote of censure insufficient to clear the Association and that the other course was necessary.

The ayes and naves were now called, and the amendment was lost, 30 to 64.

Mr. Haviland then renewed his motion to postpone until next year. It was lost, 24 to 56.

The question was then taken on the original resolutions of expulsion, which were adopted, 63 to 22.

The President then said it became his painful duty to announce that the resolutions are adopted, and in consequence, Mr. Frederick Stearns is expelled from this Association.

Mr. Stearns acknowledged his expulsion, and asked the Association to judge his future by what he should do, and retired.

Mr. Bringhurst now offered the following preamble and resolution :

"Whereas, as the custom of giving expensive entertainments to visiting members by those residing at the place of meeting is at once onerous to the latter, and detrimental to the interests of this Association; therefore

"Resolved, That the Local Secretary be instructed that the members of this Association neither expect nor desire any special entertainment at the hands of the Baltimore members during our meeting there in 1870."

MR. BRINGHURST thought this would relieve the members from any expensive effort as had now become common and which had custom is growing upon us.

MR. COLCORD approved the resolution.

DR. SQUIBB heartily approved of the resolution, and hoped the Association would give its voice in favor of it. We don't want to avoid social intercourse. If our friends in Baltimore should meet us in the evening at our hotel and give us the hand of welcome without an entertainment, and in the intervals of the meeting let us do as we please in the employment of our time, they would thus extend the best kind of hospitality to us. When so much pains are taken by our friends we feel averse to absent ourselves, even though a headache or other reason for absence may occur. He thought the sense of the Association was against these demonstrations of hospitality, and a proper expression of it in this full meeting would have its effect.

MR. SHINN approved the remarks of Dr. Squibb.

MR. PROCTER wished to say that an admirable way of showing kind feeling at the places of meeting was to facilitate the wishes of visiting members to see the places visited by giving printed information in small compass with a cheap map of the place. Then each member can direct his own steps.

The resolution was then adopted without dissent.

Mr. Shuey offered the following :

Resolved, That our warmest thanks are due to the Reception Committee and Local Secretary of this meeting of the Association for their cordial and hearty endeavors to receive and entertain our Association. That in Chicago we have met a whole-souled, large-hearted and open-handed people, and we will leave this place with feelings of regret.

The question was put by Mr. Tufts, and the resolution adopted.

Queries 26 and 29 being called for, Mr. Llewellyn of New Mexico, in a note to Mr. Procter, said he was unable, from circumstances arising out of his removal to that place, to answer the queries given to him.

Dr. Garrigues read a paper on Saginaw Valley Salt, which was accepted and referred for publication. The paper was illustrated by specimens of the Saginaw salt.

The Executive Committee reported the following names of candidates for membership, Messrs. Ehrman and Hambright Tellers, who reported a unanimous election :—

Charles F. Malone, Quincy, Ill.	Newton Pierpont, Young America, Ill.
T. E. Smith, Leavenworth, Kansas.	H. B. Johnson, Anderson, Ind.
J. W. Price, " "	William A. Cotting, Milledgeville, Ga.
R. E. Wilson, Kansas City, Mo.	John W. Ray, New York, N. Y.
Abraham Boyd, Galesburg, Ill.	
Henry T. O'Farrell, Chicago, Ill.	

Mr. Tufts now wanted to have a little informal talk with the members on the subject of the finances; he said the children of Israel were required to make bricks without straw, but they could not do it any more than the officers and committees of this Association could carry it on without funds. The Proceedings cost a great deal of money; the members expected to get them, but the members don't pay up their dues promptly; yet the printer must be paid. He could not do it, nor the Chairman of the Executive Committee. How was it to be done? That was the question. How are we to make bricks without straw?

Dr. Squibb gave notice of his intention to bring forward a change in the Constitution, to come up the 1st session next year, fixing the annual assessment at five dollars.

Mr. Procter asked the Treasurer if the amount due the Association was paid, was it sufficient to supply the treasury for the year.

Mr. Tufts thought it would, and for want of the \$1000 to \$1500 due each year the Executive officers have to be annoyed by the unavoidable delay of payments.

Mr. Procter thought if \$3.00 would pay expenses we had better raise money by direct subscription and get square, and then try if we could not keep so with the three dollar subscription.

Dr. Squibb thought it would be too heavy a tax on individuals to raise it voluntarily.

Various remarks were made by Mr. Garrigues, Dr. Squibb, Prof. Maisch, Mr. Colcord, Mr. Sargent and Mr. Tufts.

Mr. Taylor moved that the Executive Committee be authorized to withhold the Proceedings from any member in arrears, and not to distribute the Proceedings until the money had been received. The motion was carried.

[A voluntary subscription made at the suggestion of Dr. Squibb by a number of members present was now handed to the Treasurer.]

Prof. Maisch read a paper by J. L. Kidwell, of Washington, D. C., which was referred.

Query 27 was not answered, but a letter from Mr. Eberle caused it to be continued to him till next year.

Mr. E. Milhau made some verbal remarks on pills coated with gelatin and honey, by the new process of Caulape & Co., which he deemed a great improvement on sugar coating, as the pills need not be dried before coating and the latter was much thinner than sugar coating.

Mr. Hirsh read a paper on Glyconin (?) a compound of glycerin and yelk of egg; and another on an indelible anilin ink.

Mr. Taylor moved that the Association adjourn to meet on board the boat, (an excursion on Lake Michigan having been planned for the afternoon).

Mr. Menninger hoped the business would be transacted now, as many members would go on the afternoon trains East and South.

The Business Committee moved that when the Association adjourns it adjourns to meet in Baltimore, the second Monday of September, 1869, at 3 o'clock, P. M., which was agreed to.

Mr. Procter, from the Nominating Committee, reported the name of Prof. J. Faris Moore, of Baltimore, for Local Secretary, and a ballot deposited by the President, on motion of Dr. Squibb, effected his election.

A paper by Mr. Hoagland was read by title and referred.

All queries remaining unanswered and not otherwise disposed of were directed to be dropped.

Mr. Menninger said it would be impossible for the Committee on Specimens to make a full Report at present. The Chairman, Mr. Fuller, is actively engaged, and the sub-reports were ready, but the general report will have to be handed to the Executive Committee when completed.

On motion this course was allowed, and the Committee duly authorized.

Mr. Colcord now called attention to a new kind of wooden pill boxes, made with great skill and neatness by glueing two varieties of wood together cross-grained, so as to make them strong whilst very thin and quite smooth and tight.

The minutes of the session were now read and approved.

The Association then adjourned to meet in Baltimore, on the second Tuesday of September, 1870, at 3 o'clock P. M.

ON THE NOMENCLATURE AND SOME DEFINITIONS IN
THE MATERIA MEDICA LIST U.S.P.

BY JOHN M. MAISCH.

If we compare our present Pharmacopœia with former editions of the same work, it is gratifying to notice the evident progress as manifested in the processes of the numerous pharmacial and chemical preparations. The list of materia medica, as far as the vegetable products are concerned, is a well selected enumeration of those in general use in this country, and comprises also such indigenous drugs as are used in some localities or deserve the notice and investigation of the physician and pharmacist.

The nomenclature adopted in our Pharmacopœia is the same which had been used by the three Pharmacopœias formerly in use in Great Britain and Ireland; the generic or, in a few instances, the specific botanical name is given, and this is then explained to mean a certain part of the plant. In those cases where our Pharmacopœia recognizes as officinal two different parts of the same plant, the name thereof is usually given, and this is preceded by the botanical name in the genitive case. The officinal names are arranged in alphabetical order, and consequently articles which, at least as far as their pharmacognostical relations are concerned, ought to be in close juxtaposition, may be widely separated from each other, as for instance *Krameria* and *Rubus*, *Cimicifuga* and *Helleborus*, *Buchu* and *Uva ursi*, *Hyoscyamus* and *Stramonium*, *Prunus Virginiana* and *Sassafras*, *Anthemis* and *Matricaria*, &c.; on the other hand, drugs which have no external resemblance are placed side by side merely because they are received from the same plant, as the roots and leaves of *aconite* and *belladonna*, the leaves and seed of *stramonium*, &c.

Aside from this consideration, such a system universally adopted, would be productive of mistakes, frequently very serious, if a prescription written in one country would be put up in another, as is now so frequently the case with the increased facilities of travel. *Aconitum* may mean the leaves in one country, while in another the tubers only are recognized as officinal. *Conium* may stand for the fruit in one place, while another might have the herb officinal under the same name; *stramonium* might be the term for the seeds or the leaves in two adjoining countries.

Another source of mistakes, if our system of nomenclature was generally followed, would be found in the fact that in different countries occasionally two different parts of two different species of the same genus are employed medicinally. If fructus rubi idæi of continental Europe was officinal as *Rubus*, the syrupus rubi of Europe would then be totally different from the preparation officinal with us under that name.

For these considerations, the writer is personally in favor of designating by the nomenclature not only the officinal plant, but likewise the part of that plant, and moreover to give precedence to the latter, by saying *radix belladonnæ*, *folium aconiti*, *fructus conii*, *semen stramonii*, &c.

While I regard such a system of nomenclature as by far preferable to the one now in use in our Pharmacopœia, I am not prepared to advocate its adoption in the next revised edition, but believe that in consequence of the frequent intercourse with Europe the time has arrived, when discussions on this subject ought to be invited. The fact that a new European Pharmacopœia, that of Austria, has adopted the system to which we still adhere, may, I judge, be merely regarded as an experiment, which sooner or later will be again abandoned.

Our Pharmacopœia defines in a few words the meaning of the names of the officinal drugs by stating the officinal part and giving the full botanical name of the plant. The terms employed for designating these officinal parts are in some cases erroneous, while in others there appears to be a want of system, a lack of uniformity, which would seem to call for a revision of these terms. Without pretending or intending to exhaust the subject, I take the liberty to point out the most prominent of these errors and inconsistencies, and likewise to notice some observations made within the last ten years which will necessitate a change in the wording of some definitions.

At the meeting of the American Pharmaceutical Association in 1867, this subject incidentally came up for discussion with regard to the terms root and rhizome as employed by the pharmacopœia. From this discussion it would appear that rhizomes with the attached rootlets, the latter predominating, are called roots, while the term rhizome designates either that part alone,

or the two together, the roots occupying the smaller bulk. The term rhizome is used eleven times in our Pharmacopœia, and always in consonance with this rule. Calamus, curcuma, iris florentina, iris versicolor, podophyllum, sanguinaria, veratrum album and zingiber, occur in commerce mostly entirely destitute of roots; while geranium and veratrum viride usually have the rootlets attached, and filix mas, besides the small adventitious roots, is covered with the base of the stipes closely overlapping each other. Among those drugs which the pharmacopœia defines as roots, we meet tormentilla in the market almost or entirely free from rootlets; cimicifuga, helleborus, hydrastis, leptandra and some others have large rhizomes and small roots as compared with the size and bulk of the former. Goldthread, though defined as the root of *Coptis trifolia*, always consists of the entire plant, which, as met with in commerce, has many leaves and but few small rootlets, the underground portion consisting mainly of the long golden yellow thread-like rhizome.

Jalap has a globular rootstock entirely free from leaf scars, and below suddenly contracted into one or sometimes two long, rather thin, somewhat branching roots, which in the commercial article have been almost completely removed. Several stems are produced which often form long runners and are then beset with smaller, more oblong tubers, which otherwise are of the same structure as the main one; this occasionally sends off branches, which again swell into tubers. From this description, which is taken from Flückiger's *Pharmakognosie*, it is very apparent that jalap must indeed be regarded as a tuber and not as a root.

Aconitum napellus grows from a small napiform tuber which produces one or more short branches, the last nodes of which enlarge to tubers of the same shape; in commerce we frequently find two or three still united, or if separate, the very short rhizomes are usually attached to some, or at least the scars are visible where the rhizomes have become detached.

The term *corm* is sometimes made to include almost all forms of short and thick underground stems and buds, except the foliaceous and scaly bulb; but the true scientific definition makes it a solid bulb, that is a plantiparous bud with a con-

tracted axis and a fleshy leaf. If this is admitted, the officinal portion of colchicum and arum are not corms, but tubers.

The development of the new tubers of colchicum takes place in early summer; the short underground stem flowers late in the fall; its leaves are developed the following spring, and soon afterwards its lowest internode becomes fleshy and thickened and produces the succeeding autumn again a short branch, on which the flower is borne. (*Flückiger's Pharmakognosie*, 181).

The same process requires a much shorter time with *Arum triphyllum*. Immediately after the flowering period in the spring, a number of buds are produced upon the tuber which soon develop into short rhizomes of about the thickness of a thin quill; the last (several?) internode then begins to swell and assume a depressed globular shape, from the upper half of which adventitious roots are formed, when the rhizome gradually dies, leaving the newly formed tubers separate, and the apex of each with the rudimentary bud for the overground stem which is developed the succeeding year. A few weeks after flowering, the short-lived rhizomes and the new tubers may, in rich soil, be dug up in every phase of development and decay.

The Pharmacopœia states American Senna to be the *leaves* of *Cassia marilandica*. Though placed in the primary list, I have been unable to find it in our commerce for years past; but what I did see, fifteen and more years ago, consisted correctly of the *leaflets* only, and was then a much cleaner drug than Alexandria senna.

Though never found in our commerce, our Pharmacopœia very properly ordered the leaves only of *Nepeta cataria*, and imposes upon the pharmacist the trouble of garbling the commercial article. With the same propriety ought to have been directed, instead of the herbs, the leaves of *Mentha piperita* and *viridis*, *Melissa officinalis*, *Marrubium vulgare*, *Hedeoma pulegioides* and probably some others.

Instead of the herb and flowers, the tops and leaves ought to be directed of *Achillea millefolium*, as is very properly the case of *absinthium* and *eupatorium*, though both are usually met in our commerce intermixed with the stems.

Rosmarinus is defined as the tops, while the commercial article consists of the leaves of *R. officinalis*.

Among the drugs derived from the natural order Compositæ, we have flowers with the officinal names of Anthemis, Matricaria, Arnica and Carthamus. The first two consist of the entire heads, the third is composed of the heads from which frequently the involucre has been removed, and the last is merely the florets, or rather the corollas of the individual flowers.

The fruits figure in our Pharmacopœia under the names of fruit, unripe fruit, dried fruit, fruit deprived of the rind, preserved fruit, unripe capsule, ripe capsule, unripe berry, ripe berry and perhaps strobile. I am inclined in favor of keeping aloof in our Pharmacopœia from the quarrels of botanists in regard to the adoption and the precise meaning of certain terms, and in this instance to define all drugs of this class as the *fruits*, leaving the use of the other terms for commentaries and commentators. If the Pharmacopœia, however, chooses to adopt a certain botanical terminology for defining the officinal fruits, the system ought to be carried out. We would then have to place capsicum, uva passa, diospyros and colocynthis amongst the berries, and cardamomum amongst the capsules; prunum and rhus glabrum would have to be called drupes; a name (cremocarp or diakene) would have to be adopted for the officinal fruits of umbelliferæ, and juniperus and ficus would have to receive names, a courtesy accorded to hops, with which they agree in the fact of not being true fruits.

It would also become necessary to adopt for cassia fistula one of the names proposed for the cassia fruits, since they evidently differ from the ordinary legume by their transverse partitions and their indehiscence. Tamarinds always consist of the fruit entirely deprived of the pericarp, fragments of which are sometimes present merely as an accidental admixture. Hordeum is a fruit, not seed, decorticated to such an extent that the embryo is removed and merely the albumen remains with a portion of the integuments of the fruit and seed in the one-sided groove.

After the beautiful researches of Tulasne, (*Annal. des Sciences Nat. Botan.* xx, 1853), it seems decidedly wrong to define ergot as the decessed seed of rye, while in reality it is a fungus (*Claviceps purpurea*, Tul.), in a certain state of development growing from the diseased ovary.

The term *kernel* as employed by the Pharmacopœia for almonds and nutmegs is good as far as it goes. Nutmeg consists simply of the albumen enclosing the small embryo of *Myristica moschata*. But almonds, as our Pharmacopœia orders (but not defines) them, evidently mean the seeds; for in *Mistura* and *Syrupus amygdalæ* it is expressly directed to blanch them, (this direction is not contained in the formula for *extr. pruni virg. fluid*), and the object of blanching is merely to remove the seed coverings; hence it is either unnecessary to direct the blanching of almonds, or by the term *amygdalus* the Pharmacopœia means the seed and not the kernel, which latter is exalbuminous and consists of the embryo only.

The term *juice* as used by our Pharmacopœia is a very convenient one, but does not convey any definite idea; if we place a few of these so-called juices side by side, as for instance *limonis succus*, *aloe*, *manna*, *acacia*, *copaiba*, *ammoniacum*, *opium* and *guaiaci resina*, their properties make it very apparent that we have before us a heterogenous collection. The juice proper of a plant is an aqueous liquid, holding inorganic salts and various organic compounds in solution, and will, perhaps in all cases, when evaporated spontaneously or by means of artificial heat, produce a mass, *aloe* and *kino* for instance, in appearance resembling and in point of fact identical with the extracts. *Opium*, *scammonium*, *lactucarium* and probably some of the gum resins are not obtained from what is understood by the *juice* of the respective plants, but from the liquid contained in peculiar vessels, the milk vessels; this milk-juice, the physiological function of which is not at all understood, is of a different composition from the true juice, and usually congeals very readily on exposure to the air.

Guaiac resin is a secretion of the tree, stored away in the heartwood, and has no connection with the juice. Recent investigations have shown that the gums, some gum resins, and probably *manna*, some volatile oils and resins are generated by the metamorphosis, the deorganization of the vegetable cells, and therefore constitute a retroformation of the insoluble tissues into soluble compounds.

It is plainly wrong to define by the same name substances

so different in origin, and it would probably be conducive of a better understanding and of clear ideas, if they were defined in accordance with their chemical composition as gums, gum-resins, oleoresins and resins; and as juice and milk-juice in those few instances only in which the composition is more complex, and the drugs are really the unaltered, the solidified or inspissated physiological liquid.

ON CAMPBELL'S METHOD OF PERCOLATION.

Editor American Journal of Pharmacy.

Dear Sir:—Having for some time been in the habit of preparing my own fluid extracts, and having with some success experimented outside the strict requirements of the Pharmacopœia, I was favorably impressed with the theory set forth in the Journal for Sept., by Mr. Samuel Campbell. But while my experiments have not been extended enough to justify me fully in opposing a theory advanced by so competent an authority and apparently based on thorough trial, yet I am induced, considering the importance of the subject, to question the correctness of some of Mr. Campbell's conclusions.

My first experiment was with the bark of *Prun. Virg.*, wherein I followed Mr. C's formula, using equal parts of pure glycerin and water, reducing the bark to a powder "moderately coarse." I found, however, that 16 ounces of the menstruum were required simply to *dampen* the drug, leaving no "remainder" to pour into the percolator. Thus dampened, the drug was packed firmly in a conical percolator and allowed to macerate four days, at the end of which time I commenced the displacing process, carefully arranging the displacing liquid (dilute alcohol)* by means of an inverted bottle in the familiar way, so as merely to compensate for the percolation, thereby almost totally obviating any admixture of menstruum, and displacing liquid during the process, in my opinion a very important precaution. In twenty-four hours there had passed 16 ounces of the extract, of a fine deep color, possessing the properties of the bark in a higher degree than any commercial preparation I had ever seen.

* This is a misunderstanding of Mr. Campbell, as he does not direct an alcoholic menstruum for wild cherr fluid extract.

But on continuing the process I obtained 4 ounces more of nearly as deep a color, and from all appearances having fully the strength of the present standard article of the U. S. P. The drug was now thoroughly exhausted and tasteless, but in exhaustion had yielded 20 ounces of extract. The process repeated with the employment of some menstruum heated previous to mixing with the bark to about 200° F., yielded a like result, somewhat richer, apparently, in hydrocyanic acid, owing probably to the more intense reaction of the warm menstruum with the amygdalin of the bark. In both cases I *failed to exhaust* 16 ounces of the drug in 16 ounces of the menstruum.

My next attempt was with ergot, which I treated with a "hydro-alcoholic" menstruum, obtaining somewhat better results, *i. e.* after displacing 16 ounces of extract from 16 ounces of the powder (moderately coarse) I obtained a further quantity of about 2 ounces, certainly, however, too strongly charged with the recognizable principles of the drug to be inert or useless.

During the progress of these experiments and others yet incomplete, I have been led to think that a quantity of any menstruum sufficient *only* to dampen is *insufficient* to dissolve all the extractive matter of a drug, and consequently fails to exhaust it when displaced. It is apparent at once that a great difference exists in the absorbing power of different substances to be treated; that, for instance, the quantity of liquid that would convert one ounce of powdered blood-root or opium into a pasty or creamy consistence, would render an ounce of powdered digitalis, senna or cinchona, only very slightly damp. I can conceive that when the menstruum thoroughly saturates the drug so as to cover it when properly packed in the percolator, careful displacement would result in almost completely exhausting it after due maceration. But when 16 ounces of a given menstruum fall short of uniformly and completely moistening 16 ounces of the drug by from 2 to 4 ounces, it must surely absorb to saturation from the displacing liquid, and the first flow of 16 ounces must leave behind much that is useful, and therefore falls short of our idea of a fluid extract.

That a fluid extract of wild cherry bark or of cinchona of much greater strength and better quality than the officinal preparation, of which at most one and a quarter ounces shall

represent one ounce of the crude drug, I will testify (from actual proof) can be made by Mr. Campbell's process. But that we can in all cases by that process reach the definite results required by our standard I am not prepared to admit.

I hope, however, that the subject may be more fully discussed; hope in fact that its "thorough exhaustion" may result in confirming Mr. Campbell's views and refuting my own doubts.

H. P. REYNOLDS.

Plainfield, N. J., Sept. 29, 1869.

NOTE BY EDITOR.—Mr. Campbell, in stating his process in the September number, does not make his meaning clear as regards moistening the powder. We also think he has erred in directing the cork to be inserted *before* the air has been expelled by the descending fluid after pouring on the menstruum. When a pound of powder is moistened and properly packed in a funnel and the balance of the pint of menstruum poured on it, the first portion of the latter, descending gradually from layer to layer, carries a large part of the more soluble constituents with it to the lower part of the funnel, leaving the last portion of the menstruum much less to extract. When, therefore, the displacing liquid is added after four days maceration, the strength of the absorbed liquid in the top layer of the powder is very much less than if the powder and menstruum had been uniformly mixed and left to macerate for four days, and consequently, if any of it gets admixed with the displacing liquid it will occasion a less final deficiency. Theoretically it is safer to use only about 14 fluidounces of menstruum for each 16 troyounces of ingredients for maceration, because as the extracted matter occupies space, it follows that the original 16 fluidounces of menstruum cannot possibly be all included in the 16 fluidounces of finished fluid extract.

The quantity of fluid required to moisten a powder for percolation is only that quantity that is necessary to slightly soften the tissues so as to facilitate packing and *invite* the descent of the second portion of liquid. This portion is not always the same, but it is rarely necessary to make it more than one-fourth or one-third of the pint when a pound of powder is treated.

W. P. JR.

TO PREVENT THE BUMPING OF LIQUIDS.

Editor American Journal of Pharmacy.

Dear Sir:—The bumping of liquids when submitted to distillation has often annoyed me, and I have sought for means to prevent it in compendiums and journals on Chemistry and Technology, but without finding entirely reliable ones. When I saw the article of Hugo Müller on this subject in the last number of your valuable journal, I conceived at once, supported by my

own experience, that his proposition to run a constant stream of some gas through the boiling liquid would answer, at least in most cases. If you work with acids, however, such as nitric, sulphuric, or with other corrosive liquids, chloride of antimony, etc., where the bumping is sometimes so strong that your cork or india-rubber stopper, by which you fit your glass tube into the tubulus of the retort, will not resist the action of the hot vapors, and consequently the whole arrangement will not be applicable. There is another objection: the operation of condensation is certainly rendered more difficult, where a permanent gas is mixed with the vapors, consequently an imperfect condensation and an escape of some, perhaps not unimportant, part of the liquid is to be feared.

In distilling acids and other liquids I used to proceed in the following manner, by far in the most cases with perfectly satisfactory results; once or twice, however, I cannot help stating, the result has been unaccountably dissatisfactory.

The end of an ordinary glass pipe of about $\frac{1}{8}$ inch opening is shut at one end and this end bent into a little hook. The glass pipe is then cut exactly so long as to reach from the bottom of a glass retort to within $\frac{1}{2}$ inch or an inch of the stopper of the tubulus. By means of the hook and a piece of twine or a little hook of thin wire this glass pipe is placed into the retort, the open end at the bottom, and the retort can be filled, or the retort is filled first, and the glass pipe entered afterwards, which will probably be preferable. If the liquid now is warmed, the air in the glass pipe is expanded, and constantly bubbles out at the open end, and if the boiling point is reached, vapors of the tension of the atmosphere are created at the spot where the glass pipe stands on the bottom of the retort, and the boiling continues regularly and quietly in far the most cases for days. If the retort is to be refilled, the glass pipe is to be taken out, in order to empty it, and then is replaced again, also when the operation is not finished the first day, but the retort cooled and operation resumed next morning.

You would greatly oblige me by giving the above a space in your valuable journal.

Yours, respectfully,

THEO. SCHUMANN,

Newark, N. J., Sept. 25, 1869.

Apothecary.

ON THE PROCESS FOR PREPARING JAMES' POWDER.

BY MICHAEL DONOVAN, ESQ.

Honorary Member of the College of Pharmacy of Philadelphia, etc., etc.

More than two centuries ago a medicine was in repute made by burning shavings of hartshorn or of bones along with sulphuret of antimony, and continually raking or stirring them together until the sulphur was burnt off, and the powder had become light gray or ash-colored. It was known as Lile's and Schawanberg's fever powder, and was much used about the middle of the seventeenth century.

In 1746 Dr. Robert James, a physician of talent and eminent learning, finding the powder to be an excellent medicine, and having made a trifling alteration in the process of preparing it, secured a right to the exclusive manufacture by a patent. The conditions of obtaining a patent were that the petitioner shall make oath that he is the sole inventor, and that he has deposited in Chancery a true and precise specification of the mode of producing the article for which he seeks the monopoly. But Dr. James was not the sole inventor, nor did his specification disclose his process; nor could the powder, thenceforward called "James' Powder," be prepared by the means which he pretended were sufficient: he conceived that his best security was secrecy. Dr. James, therefore, virtually had no patent right.

For a long series of years nothing was certainly known of the composition of the powder until the investigation was undertaken by Dr. George Pearson, who in 1791 gave an account of it to the Royal Society, in a communication which was published in the "Philosophical Transactions."

A medicine founded on the experiments of Pearson, and intended as a substitute for James' Powder, was introduced into the London Pharmacopœia of 1788 under the name of Pulvis Antimonialis. It was accordingly used by apothecaries as a succedaneum on account of the high price of the real James' powder; but it never obtained the confidence of practitioners; and hence the origin of the adjunct used in prescriptions, *verus*.

Indeed it never deserved their confidence, being, as directed in the Pharmacopœia, an almost inert substance.

Dr. Pearson informs us that all the parcels of James' powder that he had seen would be called white powders, but no two of them were white in the same degree; they had either "a shade of yellow or stone color, and none were perfectly white, or so white as some specimens of *Pulvis Antimonialis* of the shops. Some parcels had a brassy taste, others no taste. Dr. Pearson having formed a powder from bone-ashes and crude sulphuret of antimony possessed of properties similar in kind to every one of those ascertained to belong to James' powder, with scarcely any difference in the degree of them, considered that they were the same. Beside this synthetic proof, he adduced the evidence of analysis, and made experiments in proof before competent judges. He says, "It is very probable that no degree or duration of fire applied in open or close vessels alone can produce a calx of the same kind as that in James' powder, nor, perhaps can such a powder be composed by fire applied in close vessels to calx of antimony mixed with calcined bone; but if calx of antimony, duly calcined, be mixed with calcined bone, and exposed to air, in a due degree of fire, for a sufficient length of time, and then a still greater degree of fire be applied to it in close vessels, such a compound may be formed as James' powder. . . . No such white powder is formed by a mixture of any calx of antimony and bone ashes, exposed to any degree of fire in close vessels, without previous exposure to fire and air."

Pearson concludes from all his experiments that James' powder consists of phosphate of lime and a peculiar calx of antimony, different from all others, composing a triple compound in the proportion of about 57 parts of calx of antimony and 43 of phosphate of lime, or a double compound of the same elements.

The admitted medical efficacy and the high price of James' powder induced the various colleges of physicians to introduce into their pharmacopœias a process for imitating it. They took for their guide the investigations of Pearson, and dictated formulæ which apparently did not much differ from the prescription of that accomplished physician. This preparation, called *Pulvis Antimonialis*, proved an utter failure, having neither the com-

position nor the medical effects of the powder of James. In the manipulation of the manufacturers, the chief object seemed to be the production of a powder as white as snow,—the very quality which it ought not to possess if intended to resemble the powder of James, which at that time was always slightly yellow, or cream-colored, or even stone-colored, as we learn from Pearson.

I made a number of trials of the process of the three British Pharmacopœias (1816), but could not obtain the powder white like the *Pulvis Antimonialis* of the druggists, or like the James's powder then in use. The roasted materials introduced into a skittle-pot, with another inverted, both luted together, were maintained at a white heat in an air-furnace for two hours. When cold, the included matter was found converted into a dense, close-grained, buff-colored mass, as hard as limestone and very heavy. Being again heated to whiteness, it became a deep olive-brown mass, harder than before.

I repeated the process on new materials, heating them similarly in a different air-furnace, and obtained an olive-brown semi-vitrified mass with dark streaks, harder than the former mass, a small portion of a white enamel appearing on the side of the skittle-pot.

It was plain, therefore, that the heat was too high, and that the use of the air-furnace, originally directed by Pearson, and adopted in all the pharmacopœias, was an error. I therefore repeated the process, and placed the skittle-pot containing the powder in a common fire-grate, heaping coal round and over it. In due time the skittle-pot became red-hot, and in this state it was kept for an hour and a half or two hours. When cold, it was found to be a snow-white powder, covered by a congeries of crystals a quarter of an inch thick. Thus one important fact was ascertained.

On repeating this method several times, and using an iron ladle in a common coal fire, the resulting powder, instead of being uniformly white, proved in some instances to be buff-colored; but occasionally the snow-white powder was obtained. As the failure was not due to the final heating, it must have originated while the materials were in the iron ladle. Various

experiments convinced me that the heating in the ladle is the most important part of the whole process; and at length it became evident that when the heat, accompanied by continued stirring or raking, was maintained until the powder changed from dark brown to a light yellowish-grey, the final heating in a skittle-pot brightened it, or the greater part of it, to a perfect white. The light yellowish-grey color here mentioned will be best understood by comparing it to the dust of a Bath brick, often used for cleaning dinner knives, but a little paler.

But to heat the powder while in the ladle fully to this color, but not beyond it, was the difficulty.

During these experiments I perceived that when the quantities of the two ingredients were as large as ten ounces of each, the resulting powder when taken from the skittle-pot never proved white, but generally dark grey, interspersed with a deep yellow-colored portion. This fact pointed to the conclusion that the ladle was too small for that quantity of materials, that due raking during the heating was impeded, and that the desulphuration was accordingly imperfect. A hemispherical ladle capable of holding a gallon being procured, a charge of ten ounces of each was placed on the fire and continually raked for several hours, at first without any intermission, and at length with short intervals of rest, until the proper color was attained. This matter, being finely powdered, was introduced into a proportionately large skittle pot and exposed to a well-built coal fire in a common grate, and kept red-hot for three hours. When cold, the top portion proved to be a thin cake of dark-colored matter; under that was a small quantity of yellow portion; and the remainder was very nearly snow-white.

On trying so large a charge as sixteen ounces of each ingredient in the large ladle it proved to be unmanageable; the carbon at an early period ignited; the mass softened, collected into dark-colored lumps, which could not be raked notwithstanding much effort. Finding it impracticable, I took out the charge when cold, and being powdered, it was returned into the ladle in four different portions, each of which was separately raked while heating, until the proper color appeared to be attained. The whole of the powder being charged into a very large skittle-

pot, was heated in a well-built and well-supplied fire for several hours. The powder, when cold, was found to be yellow throughout; for the proper proportion between the quantity of matter and the containing iron ladle had not been observed, the necessity of which was thus amply proved. It is a certain fact that a large quantity in a small ladle will never afford a white powder.

By reversing the conditions of the process, that is, by acting with due care on a small quantity of materials in a very large ladle, we are pretty sure of bringing the charge safely through its first stage of danger. Thus when four ounces of hartshorn-shavings and the same weight of sulphuret of antimony were well raked in a ladle of the capacity of a gallon, until the requisite color was attained, and then heated in the skittle-pot for an hour or more in the usual manner, the powder almost always turned out white, generally snow-white, but sometimes with the cream-colored tinge noticed by Pearson. Under the condition of small charges in a very large ladle, the snow-white color was sometimes produced by a very hot fire in fifteen minutes after the skittle-pot had become red-hot, but with a fire not so hot, a much longer time was necessary.

After following up these experiments for some time, I found that much trouble and anxious watching would be saved by raking the bone-shavings, without the sulphuret of antimony, until the ammoniacal fumes, the sulphur, and the extremely fetid gases had been expelled; and making proper allowance in subsequently apportioning the antimony.

Adopting this method, six ounces of calcined hartshorn-shavings mixed with four ounces of sulphuret of antimony were raked over a graduated fire, in my largest ladle, until the powder had assumed the usual yellowish-grey hue. It was then transferred to a small skittle-pot, which, being placed on a stand in a large fire-grate, coals were built round and over it, and a cover applied. The skittle-pot was kept red-hot for six hours. When cold, it was cautiously examined. No part of the partially cohering powder was white; it was almost all dark grey, but much darker towards the top; the portion at the very top was full of particles of metallic antimony, and even small masses

of it which had assumed a somewhat rounded form. The dark grey color of the whole mass seemed to be caused by the intermixture of thousands of minute shining particles of the metal with the phosphate of lime. Round the mouth of the skittle-pot and on its cover was a small accumulation of white powder, some of which was minutely crystallized, and was deposited by the dense white smoke which issued from the skittle-pot every time the cover was removed, and ceased when it was replaced. At the bottom of the skittle-pot was a small quantity of yellow powder. It was remarkable that, although many processes had been conducted in this fire-grate in all respects in the same manner, except that the fire had been maintained for two hours only, the powder had always turned out white, a significant fact which seemed strongly to indicate that the heating had been continued too long, and perhaps too intensely. It also agreed with the two cases already described, in which the intense heat of the furnace during two hours had produced the same injurious effect. It corresponded also with the fact already stated, that a portion which had been adequately raked was rendered perfectly white in the crucible by fifteen minutes' red heat in a strong fire, the same effect not being producible by a weaker heat for a much greater length of time.

In due time, after finishing a quantity of my James' powder, I was anxious to know something of its medical effects, and with this view gave it to several friends for trial, and used it also in my own person. But in most of the cases tried, the powder had a rough action, producing sickness and sometimes vomiting. I had used equal quantities of bone-ashes and sulphuret of antimony as directed by Pearson, and followed in the Pharmacopœias, but this proved to be too much of the sulphuret. I therefore made new trials of the process with half the quantity of antimony. In these proportions the difficulty and uncertainty of the process were greatly diminished; the powder almost always turned out snow-white, and when used as a medicine in due doses was for the most part easily borne in the *primæ viæ*. But it is very probable that Dr. James employed a less ratio of sulphuret of antimony even than one-half; he sometimes prescribed his powder in doses of ten grains every six hours, and even

twenty grains at once, without much effect on the stomach, bowels, or skin.

There is a slight objection to conducting the process of roasting in an iron ladle, and raking with an iron rake; minute particles of protoxide of iron are found in the resulting powder, very small in quantity, but unpleasant in appearance. This may be remedied by substituting an earthen dish, and it was such a vessel that Pearson used in his experiments; but the iron ladle is far more convenient.

I believe that James's powder may be prepared in the following manner:—Let any quantity, say eight ounces, of bone-shavings be heated in an earthenware dish or an iron ladle over a moderate fire, and frequently stirred or raked during its incineration. When burnt to a black powder and ammoniacal fumes are no longer perceptible, let four ounces of levigated sulphuret of antimony be thrown in, and let stirring with an iron rod from the bottom and all parts be immediately commenced and rapidly continued, so that the sulphureous fumes shall have a *free* issue and be no longer discoverable. This is most important.

During the desulphuration the heat should be kept as low as may be sufficient to cause the discharge of the vapor. In the dark, the powder should show a thin, blue flame, as faint as possible; but as often as this flame disappears, the heat should be gently raised until it again appear. But neither the bottom of the ladle nor the powder should be allowed to become red-hot while vapors are discharged, or while there is blue flame from the burning sulphur. At length even a higher heat will not expel any more sulphur. During this roasting, innumerable bright spiculæ of metallic antimony will sparkle through the powder. The ladle and its contents may be allowed to become red-hot for two or three minutes, the raking being continued. If the process has been rightly conducted, the powder, at this stage, will have assumed the color of the dust of Bath brick.

The contents of the ladle should now be powdered, sifted, transferred to a skittle-pot, its cover laid on and the whole placed on a stand in the fire-grate, and lumps of coal are to be built round and above it in such a way as to permit a free

current of air to pass through. The skittle-pot and its contents will thus be brought to a uniform bright red-heat, which may be maintained at that degree for about an hour, more or less, according to the quantity. The skittle-pot is then to be taken from the fire, and should the powder prove to be pure white, except perhaps a thin layer at the top, it only requires to be reduced to the finest powder in an earthen mortar, and sifted through a fine silk sieve. Should the powder not prove white, it may be returned to the skittle-pot, placed in the fire as before, and continued in a state of ignition for half an hour, according to the judgment of the operator.

In the first part of the process, the sulphuret of antimony is slowly decomposed; its sulphur burns, and exhales in the state of sulphurous acid. The antimony, now insulated, appears in small brilliant spiculæ, which, as the heat increases, gradually disappear. In the second part of the process, when the roasted matter is heated in the skittle-pot, the antimony, while in the state of vapor, combines with oxygen, and is converted into protoxide, part of which crystallizes in the upper part of the skittle-pot, or escapes as a thick, white smoke. The heat increasing, the protoxide is converted into antimoniate of antimony, which remains mixed or combined with the phosphate of lime.

If the heat be raised much above that of a good coal fire in a common grate, the mass will slightly cohere, and in some parts will become yellowish and vitreous. If the heat be still higher, as that of an air-furnace, the powder will change to an olive-brown mass as hard as stone.

All the time the powder is in the skittle-pot and very hot, protoxide of antimony is escaping or crystallizing on the cover, and hence the difference discoverable by analysis, and by the medical effects of different parcels of James's powder. It therefore becomes an important and difficult question, what is the criterion by which the completion of the process is to be judged? I know of no other than this, that when the powder is white it is fit for use; any greater or longer-continued heat, I believe to be injurious. It may not always happen that the whole charge will prove white; when it does not, the whitest parts are to be separated, and, if worth the trouble, the remainder may be

slightly calcined again. But should the first charge, after being duly heated, prove dark colored throughout, it cannot be improved and may be rejected.

Before concluding this paper, I may mention some facts relative to James's powder which were communicated to me a great many years ago by a very old gentleman who had been an apothecary in Dublin, Mr. William Speer, the clever inventor of a well-known hydrometer for ascertaining the strength of excisable spirituous liquors. It was as follows :—

In 1758 Dr. Anthony Relhan, a Fellow of King and Queen's College of Physicians in Ireland, practised in Dublin, and was one of the physicians of Mercer's Hospital. The Fellows refused to meet him on account of his employing James's powder in his practice, although the decree against antimonials by the French College of Physicians had been long before repealed. In consequence, he wrote to Dr. James, who advised him to go to London to practice, which he did. Becoming intimate with Dr. James, the latter, during several interviews, communicated the process practically to him, his patent-right having expired. In 1760, Relhan returned to Dublin, and being acquainted with Mr. Ducros, an eminent apothecary, then residing in William Street, he communicated the process to him confidentially. Ducros prepared the powder in presence of Relhan, and it was repeatedly administered in Mercer's Hospital and other places, with exactly the effects of James's powder. Mr. Speer was apprentice to Mr. Ducros, and on his death in 1768 succeeded to his business. The widow gave up to Mr. Speer a MS. book containing the account of the *Pulvis Jacobi*, which he retained ever after. The following is the process :—"Take one pound of hartshorn-shavings; boil them in a large quantity of water, and dry them by a slow fire. Rub them to a fine powder. Then put an equal weight of the hartshorn and powdered crude antimony into a crucible, and set it on a moderate fire, stirring it with a long rod of iron for six hours or as long as it smokes."

I have repeated the above process several times, but never could produce the snow-white powder with which we are familiar; the resulting color being generally that of Bath brick dust, already described, but on a few occasions paler. Yet the state-

ment of Mr. Speer is I think supported by facts. Dr. Pearson says, "It is probable that this powder was made for several years with merely the heat necessary to carry off the sulphur and calcine the bone, in an open vessel, and consequently it was of a light clay or ash color. Its property of turning white in a greater degree of fire appears to have been a subsequent discovery." But in this greater degree of fire the powder discharges copious fumes of protoxide of antimony, and becomes less active as a medicine; and at length assuming the hard, vitreous state, it loses all medical power. On one occasion, when I had obtained the powder from the iron ladle paler than usual, I took several doses of it without any striking effect, which proves at least that, in this state, it is innoxious; its taste was most disagreeable, whereas the white powder is tasteless. I imagine that in this form the powder would prove to be in its most active state; that it was in this form that Lile's and Schawanberg's powder obtained its celebrity; and that the subsequent process of whitening it by fire deteriorates its medical effects more or less according to its degree and continuance. But it is of little use to insist on this part of the subject in the present day. If the whitening process in the skittle-pot were relinquished, and the light ash-colored powder from the ladle were accepted, we should probably have an efficacious medicine of uniform or little-varying strength.—*Lond. Pharm. Journ.*, Sept., 1869.

ON THE MANUFACTURE OF CHLORINE BY MEANS OF
PERPETUALLY - REGENERATED MANGANITE OF CAL-
CIUM.

Read before the British Association, Exeter meeting, Section B.

BY WALTER WELDON, F.C.S.

Since the last meeting of the British Association, chlorine has begun to be manufactured extensively by a process which depends on the production and perpetual regeneration of a compound no mention of which, so far as I can find, as yet exists in chemical literature. As this process, besides thus producing and continually re-producing what I believe to be a new compound, reduces, by fully 80 per cent., the principal item in the

cost of the manufacture of chlorine, greatly increases the quantity of chlorine which can be practically obtained from a given quantity of hydrochloric acid, and, moreover, enables the manufacture of chlorine to be carried on without the production of any offensive residue, I have ventured to think that a very brief account of it might not be without interest to this Section.

What has hitherto been the ordinary process of manufacturing chlorine consists simply in digesting with hydrochloric acid ores containing peroxide of manganese. The reaction which takes place, besides liberating chlorine, produces chloride of manganese, which remains behind a solution after the chlorine has gone off, and has hitherto been usually thrown away. There have been proposed and tried a great number of processes for transforming this chloride into peroxide for use over again; but the only one of them which has met with the slightest measure of practical success, prior to that which is the subject of this paper, is the one which is known, from the name of its inventor, as Dunlop's process. Dunlop's process decomposes the chloride of manganese by heating its solution, under a pressure of from two to four atmospheres, with milk of carbonate of lime, and then, in the dry way, transforms the resulting carbonate of manganese into a mixture or compound of two equivalents of peroxide with one equivalent of protoxide, by subjecting it for forty-eight hours to the action of air at a temperature of about 600° Fahr. The product of Dunlop's process is a sufficiently satisfactory one, containing about 72 per cent. of MnO_2 ; but the process requires a very formidable amount of apparatus, and, in this and other ways, is so costly that its use has never been extended beyond a single firm of manufacturers.

Three years ago I began to endeavor to work out the idea of decomposing, by either lime or magnesia, the chloride of manganese in the residual liquors of the chlorine manufacture, and then blowing air through the resulting mixture of hydrated protoxide of manganese with solution of chloride of calcium, or of chloride of magnesium, as the case might be. I took for granted that one-half of the protoxide of manganese so treated was the largest proportion of it that could thereby be converted into MnO_2 —in other words, that one could obtain only sesquioxide

by this method ; but it was soon found that, when using lime to decompose the chloride of manganese, considerably more than half the protoxide operated upon was frequently converted into MnO_2 . It was found, eventually, that more than half the protoxide was thus peroxidised only when more lime was used than simply the quantity necessary to decompose the chloride of manganese, and when what was treated with air was thus a mixture of protoxide of manganese and lime ; and it was also found that in all such cases there was a definite relation between the quantity of lime associated with the protoxide of manganese and the quantity of the protoxide, in excess of half, which became peroxidised. This led to the discovery that, whereas when protoxide of manganese by itself is treated with air in the wet way, one-half is the maximum proportion of it which can thereby be converted into MnO_2 , the association of a certain proportion of lime with the protoxide so treated will enable the whole of it to become converted into MnO_2 . It is to this fact, together with that of the much greater rapidity with which protoxide of manganese can be peroxidised by treatment with air in the wet way when lime is present than when lime is not present, that the practical success of the new method of manufacturing chlorine is mainly due.

The action of lime in increasing the proportion of protoxide of manganese which can be peroxidised by treatment with air in the wet way, evidently consists in the lime substituting itself for part of the protoxide which, when protoxide of manganese not having any other basic substance associated with it is treated with air in the wet way, does not undergo peroxidation. It would seem that the production of MnO_2 in the wet way by direct combination between hydrated MnO and atmospheric oxygen absolutely requires the presence of a base with which the MnO_2 can combine as it forms. When protoxide of manganese not having any other basic substance associated with it is treated with air in the wet way, a part of the protoxide itself has to act as the required base ; and this is the reason why, in that case, not more than half of the protoxide can become peroxidised, the other half being required to combine as MnO with the half which becomes converted into MnO_2 . When, however, the protoxide

of manganese which is treated with air in the wet way has lime associated with it, the MnO_2 which forms (or part of it, according to the proportion of lime present) combines with CaO instead of with MnO , thus leaving free to undergo peroxidation that part of the MnO which, but for the presence of the CaO , this MnO_2 must have been combined with, and which would thus have got locked up in a state in which it would have been incapable of being peroxidised, at least in the wet way and by air alone. Hence, the presence of enough lime to take the place of that half of the protoxide which, if no lime were present, would have to go into combination as base, and also to supply enough base for that half itself to combine with after undergoing peroxidation, will enable the whole of the MnO operated upon to be raised to the state of MnO_2 . The minimum quantity of lime which is enough for this purpose is an equivalent for each equivalent of MnO operated upon, or the quantity necessary to supply an equivalent of lime to all the MnO_2 which can be produced by the peroxidation of all the MnO .

By treating with air, then, a mixture of protoxide of manganese and lime suspended either in water or in solution of chloride of calcium, there is formed a compound containing MnO_2 and CaO , in the proportion of an equivalent of one to an equivalent of the other. This compound may be regarded as sesquioxide of manganese, or Mn_2O_3 , the MnO in which is replaced by CaO . I call it manganite of calcium, and I believe it to be a new compound. Gorgrew, in 1852, described a compound which he called manganite of calcium; but his compound contained five equivalents of MnO_2 per equivalent of CaO , and the CaO in it was so feebly combined that it readily decomposed chloride of manganese. My compound contains only one equivalent of MnO_2 per equivalent of CaO , and has no action upon salts of manganese.

This compound has now been produced and re-produced to the extent of some hundreds of tons. The process of producing it and applying it to the manufacture of chlorine is conducted as follows:—The residual liquor which remains after a charge of manganite has reacted upon hydrochloric acid in any suitable still is run from the still into a well or other receptacle, in which

it is treated with carbonate of lime, to neutralise any free acid and to decompose any sesquichloride of iron or sesquichloride of aluminium which may be contained in it. The neutralised liquor is then pumped up into an elevated cistern, in which it is left at rest for a few hours, in order that it may deposit certain solid matters which it now holds in suspension. The most abundant of these is usually sulphate of calcium, due to the somewhat considerable quantity of sulphuric acid which is nearly always contained in the hydrochloric acid produced in alkali works; but there are also small quantities of sesquioxide of iron, derived from the sesquichloride of iron in the hydrochloric acid, and sometimes partly from the lime used in the process, and larger or smaller quantities of alumina and silica, due to the lime. These impurities having deposited, the supernatant liquor, which is a mixed solution of chloride of manganese and chloride of calcium, and is now quite clear, and of a beautiful rose-color, is run off into another vessel, where there is added to it the quantity of lime necessary to decompose the chloride of manganese in it, and nearly an equivalent more. A blast of air is then injected into the resulting mixture, and what was at first a perfectly white mud (all the manganese in which was in the state MnO) soon becomes a very black mud, nearly all the manganese in which is in the state of MnO_2 . This is then allowed to settle for about twelve hours, at the end of which time it has separated into a denser black mud and a supernatant, clear solution of chloride of calcium. This solution of chloride of calcium having been drawn off, what remains is ready for use in the still. It is used as mud, without drying, being conveyed to the still by pipes, and entering by a hydraulic lute. In the still it meets with hydrochloric acid, from which it liberates chlorine, at the same time re-producing exactly such a residual solution as was commenced with. With this solution, the round of operations is recommenced, and so on, over and over again, continually. The samples I exhibit are portions of a charge of manganese which, at the works of Messrs. J. C. Gamble and Sons, of St. Helen's,—where this process has been worked out, by the liberal co-operation of Lieut. Colonel Gamble, the proprietor of those works, and the invaluable assistance of Mr. Bramwell, the very

able manager of them,—has actually generated chlorine from which bleaching-powder has been made, something like fifty successive times.

Hitherto, the principal item in the cost of chlorine has been that for native peroxide of manganese. Last year, in Great Britain, France, Belgium, and Germany together, there were produced about 120,000 tons of bleaching-powder, which cost, on an average, for native oxide of manganese, not much, if any less than £5 per ton. My process substitutes of this cost for native oxide of manganese a cost for the regeneration of manganite of calcium not exceeding fifteen shillings per ton of bleaching-powder, being about ten shillings for lime, one shilling for steam, one shilling for wages, and two shillings for interest and wear and tear. Moreover, whereas hitherto, at least in this country, and in all but an extremely few exceptional cases, the production of a ton of bleaching powder has required the acid from about 75 cwts. of salt: my compound yields chlorine enough for a ton of bleaching-powder from the acid from less than 45 cwts. of salt. This larger yield of chlorine is mainly due to the artificial manganite being so easily soluble that it can very readily be caused to neutralize from 95 to 99 per cent. of the acid employed, which is a very much larger proportion than can be neutralised when working with manganese ores. A third very important advantage of the new process over the old one consists in this—that, whereas the immense quantities of acid which escapes neutralization in the old process are usually—and have almost necessarily to be—sent into the rivers as free acid, the only product of the new process which has to be thrown away is a perfectly neutral solution of chloride of calcium.

Seeing that manganite of calcium, or CaMnO_3 , is only of the very same value precisely in respect of the quantity of chlorine which it can liberate from a given quantity of acid as sesquioxide (otherwise manganite of manganese, or MnMnO_3), it may be well to explain why it is preferable to produce and re-produce the former rather than the latter. The reasons for this are two. There is, firstly, the obvious reason that, when all the manganese is converted into MnO_2 , twice as much work is done per given bulk of material operated upon as when only half the

manganese is converted into MnO_2 ; and this, of course, would be a very important consideration, even if the transformation of chloride of manganese into manganite of calcium occupied the same time as its transformation into manganite of manganese. Really, however (and this is the second reason), the former operation, in which all the manganese is converted into MnO_2 , does not occupy more than one-fifth of the time required for the latter operation, in which only half the manganese is converted into MnO_2 ; and hence, while the manufacture of chlorine by means of perpetually-regenerated manganite of calcium effects the very considerable economy above stated, it is questionable whether chlorine could be manufactured by means of manganite of manganese regenerated by the same method so cheaply as by means of manganese ores.

The length of time which, when protoxide of manganese by itself is treated with air in the wet way, is required for its complete conversion into sesquioxide is very remarkable, and the fact that hydrated protoxide of manganese is somewhat freely soluble, alike in water and in neutral solution of chloride of calcium, would seem to have something to do with it. It is a curious fact that the peroxidation of protoxide of manganese by treatment with air in the wet way is greatly retarded by the presence in the medium in which the protoxide is suspended of any proto-compound of manganese in the state of solution. Thus, in a solution of either chloride or any other proto-salt of manganese, peroxidation will go on only extremely slowly; and solution of the protoxide itself, which will be present until the very end of the operation when protoxide alone is treated with air in the wet way, has the same retarding influence. On the other hand when treating with air a mixture of protoxide of manganese and lime suspended in solution of chloride of calcium, there are formed solutions containing peroxide of manganese, in the presence of which peroxidation goes on with extreme rapidity. All these solutions are more or less deeply colored, solution of the protoxide being without color. I exhibit a sample of one of the colored solutions, called by the workmen "the port-wine solution." The nature of these colored solutions has not yet been fully investigated, but I believe them to consist of

manganite of calcium dissolved in solution of oxychloride of calcium.

I may be permitted to mention, in conclusion, that, while there is every prospect, from the rapidity with which the new process of manufacturing chlorine has been and is being adopted both in this country and on the Continent, that, within a period to be measured only by months, nearly all the chlorine made in the world will be made by it, there is every likelihood that, in nearly all cases, a portion of the hydrochloric acid saved by it will be applied to the recovery of sulphur from alkali-waste. The chief reason why the recovery of sulphur from alkali-waste has been so little practised hitherto is that the manufacturers have considered it more profitable to use all their acid for the manufacture of bleaching-powder than to use any part of it for the recovery of sulphur; but the process which I have had the honor to describe will enable them to make even more bleaching-powder than they have made hitherto, and yet have enough acid left to permit of their applying to all their alkali-waste the only process for the recovery of sulphur therefrom which as yet has been found practically successful; and I am able to state that this application of a portion of the acid saved by my process will be extensively adopted.—*Chem. News*, Sept. 3, 1869.

REGENERATION OF PURE SULPHUR FROM THE RESIDUES OF THE MANUFACTURE OF SODA.

By MAX SCHAFFNER.

The author's process, which is worked at Aussig on the Elbe, yields chemically pure sulphur and is superior to that of P. W. Hoffmann and L. Mond, the results of which have only the value of pyrites. The process is divided into three parts: the preparation of the sulphur liquors, decomposition of the same, and preparation of chemically pure sulphur.

For the *preparation of the liquors* the soda residues are heaped up in the air for oxidation; after some time the heaps become heated and polysulphurets are formed, which on further oxidation form some hyposulphites. After several weeks the heaps become yellowish-green in the centre, and are then fit for ex-

traction; the mass is broken up, further exposed to the air for 24 hours, and then exhausted by lixiviation, in three basins of brickwork or iron so that concentrated solutions are obtained. The residues are further oxidized either in ditches 3 feet in width and depth, or better by passing the gases of a chimney, by means of a ventilator, under the false bottom of the exhausting vessels. In the latter case the oxidation is completed in 10 to 12 hours; more hyposulphites are formed than in the ditches and much labor is saved. The chimney gases, consisting mainly of water, carbonic acid and warm air, are well adapted to transform sulphuret of calcium into polysulphuret and hyposulphite. This oxidation may be repeated three or four times, according to the nature of the soda residues. Too long continued oxidation will produce free sulphur and sulphite, finally sulphate. The latter will occasion a loss of sulphur; the free sulphur will be taken up by the concentrated liquors.

The *decomposition of the liquors* is effected in close stone or iron vessels by muriatic acid; $\text{CaOS}_2\text{O}_2 + \text{HCl}$ yield $\text{CaCl} + \text{SO}_2 + \text{S} + \text{HO}$, and $2\text{CaS}_x + 3\text{SO}_2$ yield $2\text{CaOS}_2\text{O}_2 + \text{S}_x$. On adding muriatic acid to the liquor in the first vessel, the polysulphurets are first decomposed with the separation of sulphur and the extrication of sulphuretted hydrogen; more muriatic acid will decompose the hyposulphite, precipitate sulphur and liberate sulphurous acid which is conducted into the liquor of the second vessel, wherein it forms, with the polysulphurets, free sulphur and hyposulphite. The first vessel is heated by injecting steam to drive over all sulphurous acid, the exhausted liquor is drawn off and the sulphur collected, after which the vessel is filled with a new portion of sulphur liquor. Now the decomposition of the liquor in the second vessel is effected in the same way; however, the polysulphurets having been completely converted into hyposulphites, no sulphuretted hydrogen is given off, but sulphurous acid which is conducted into the fresh sulphur liquor in the first vessel. If properly conducted, after the first decomposition, neither sulphuretted hydrogen nor sulphurous acid must escape into the atmosphere. The sulphuret and hyposulphite in the sulphur liquor are estimated by titration, and accordingly the soda residues are oxidized more or less.

ON CYTISINA.

The preparation of pure sulphur is accomplished in an iron vessel by fusing it under some water with steam under a pressure of $1\frac{3}{4}$ atmospheres. The adhering chloride of calcium remains in solution, the gypsum is suspended in the water and the addition of some milk of lime neutralizes any free acid, while the excess forms some sulphide of calcium which dissolves any sulphide of arsenic present. This manipulation saves much labor, rendering unnecessary the careful washing, drying and distillation of the sulphur which is obtained free from arsenic. The fused sulphur collecting on the bottom of the kettle is drawn off into moulds.

In this way 60 to 65 per cent. of the sulphur contained in the soda residues is obtained. A hundred weight of sulphur requires 2 to $2\frac{1}{4}$ cwt. muriatic acid.

Where obtainable, the mother-liquors from the generation of chlorine may be used; they contain manganous and ferric chloride with much free muriatic acid. To avoid the oxidation of sulphurous to sulphuric acid by the ferric chloride, and the precipitation of sulphides of manganese and iron by the calcium sulphide, a portion of the sulphur liquors is decomposed by the muriatic acid when the sulphuretted hydrogen reduces the ferric to ferrous chloride; this and the manganous chloride act upon the hyposulphites like muriatic acid.

This process has been introduced into most soda factories of the German Zollverein, and is being introduced in England, France and Belgium. The factory at Aussig alone produces annually 9000 cwt. of chemically pure sulphur.—*Chem. Centralb.*, 1869, 491-495, from *Verhandl. der. physik.-medic. Gesellsch. in Würzburg*, 1868, I, 147.

ON CYTISINA.

BY AUG. HUSEMANN.

This alkaloid was discovered by the author and Marmé in 1865. It is obtained by exhausting the bruised seeds of *Cytisus Laburnum* with cold acidulated water, neutralizing the liquid almost with lime, precipitating with subacetate of lead, treating the filtrate with sulphuretted hydrogen and neutralizing com-

pletely with soda. The concentrated liquid is now precipitated with tannin with the precaution of keeping it neutral or faintly alkaline by the addition of soda, the precipitate is rapidly washed with water, pressed, then dissolved in water, again precipitated by subacetate of lead, the lead removed by sulphuric acid, the liquid concentrated, rendered alkaline by soda and precipitated by tannin. The filtrate is again treated the same way; the precipitates are decomposed by oxide of lead, the mixture exsiccated and exhausted with 85 per cent. alcohol. The residue after the evaporation of the alcohol is acidulated with nitric acid, treated with 6 or 8 volumes of absolute alcohol and the solution decanted from a resinous mass, when it separates crystals of nitrate of cytisine. This salt is not completely decomposed by oxide of lead or baryta; on boiling with concentrated potassa solution, the alkaloid separates as an oil which solidifies on cooling. After washing with little water, it is kept in an atmosphere of carbonic acid to convert the adhering potassa into carbonate, and then crystallized from absolute alcohol.

Cytisine $C_{40}H_{27}N_3O_2$ forms white radiating crystals of a bitterish, faintly alkaline taste, sublimable on careful heating, particularly in a current of hydrogen, in long needles and plates, fusible at about $154.5^\circ C$, very freely soluble in water and alcohol, little or not in ether, chloroform, benzol and bisulphide of carbon. It is one of the strongest vegetable bases, and precipitates not only the earths and oxides of the heavy metals, but it liberates also in the cold ammonia from its salts; it does not dissolve those oxides, and if present in excess, prevents the reduction of oxide of copper by grape-sugar.

The nitrate $C_{40}H_{27}N_3O_{21} \cdot 2NHO_6 + 4HO$ is the only salt which crystallizes readily; upon the slide under the microscope it forms crystallizations resembling fir-branches; it has an acid reaction and is sparingly soluble in absolute alcohol, freely in water and diluted alcohol, insoluble in ether.

Corrosive sublimate yields with the alkaloid a precipitate of a double salt. The chlorides of platinum and of gold, iodohydrargyrate of potassium, potassio-iodide of cadmium, biniodide of potassium and picric acid produce with dilute solutions of the salts crystallizable precipitates. Bromine water yields with

$\frac{1}{13000}$, and phosphomolybdic acid with $\frac{1}{30000}$ cytisina a turbidity.

The alkaloid has no characteristic color tests. Concentrated sulphuric acid yields (even when heated to 150 to 200°C) a colorless solution, which is not affected by molybdate of soda, but rendered permanently orange-yellow by nitric acid, and by bichromate of potassa is rendered yellow, the color becoming dirty brown and finally green. Nitric acid yields a colorless solution becoming orange on heating.

The author regards it difficult in forensic cases to prove the presence of this alkaloid, which occurs in all parts of *Cytisus Laburnum* except the wood, and is most abundant in the ripe seeds. The base appears to be peculiar to the entire genus of *Laburnum*.

Marmé states that this poison is apt to act as an emetic. Employed subcutaneously, a few decigrammes killed a large dog, 0.03 to 0.04 grm. a cat. Introduced into the blood, death was produced in cats by 0.01–0.015 grm., in dogs by 0.03 grm.; in large old rabbits by 0.01–0.015 grm. Death results from asphyxia, and may be prevented by timely resort to artificial respiration, to be continued from $\frac{1}{2}$ to 2 hours.—(*Chemisches Centralbl.* 1869, No. 32, from *Zugabe zu dem Programme der Bündner Cantonschule, Chur* 1869.

THE MANUFACTURE OF BORAX FROM THE NATIVE BORATE OF LIME.

By DR. GRAEGER.

The author states that, since he found that what is stated in treatises and handbooks on chemistry concerning pure borate of lime is generally quite erroneous, he commenced by studying the properties of that substance more minutely. Pure borate of lime is only slightly soluble in pure water, 100 parts of which, at about 18°, only dissolve from 0.304 to 0.333 parts of that salt; boiling water does not dissolve, perceptibly, more of this salt. A solution of pure borate of lime in water behaves, with the following reagents, in the following manner:—Ammonia, no precipitate; caustic potassa solution, very slight precipitate, due to a trace of carbonate present along with the caustic

alkali; carbonate of ammonia, copious precipitate, soluble in excess of precipitant; carbonates of potassa and soda, permanent precipitates; neither the nitrate of protoxide, nor of peroxide of mercury, nor, also, neutral chloride of iron, exhibit any reaction with the solution in question; solution of sulphate of copper gives a greenish blue precipitate. Since borate of lime is less soluble, even in alcohol, then sulphate of lime, a solution of the former salt in water containing only 1000th part of the salt is readily precipitated by alcohol containing 60 per cent. of absolute alcohol. The presence in solution in water of some salts, especially chloride of sodium and ammonium, largely increases the solubility of borate of lime in water. Such acids as form with lime readily soluble salts, do readily dissolve borate of lime, both pure and native; and from such solutions, if concentrated, boracic acid is precipitated. The portion of this paper relating to the manufacture of borax and boracic acid from the native borate of lime alluded to, is rather a practical receipt for the proper performance of this branch of industry, and, therefore, not well suited for abstraction, the less so as the price of fuel, soda, and other things necessarily influence the applicability of the borate of lime for that purpose.—*Chem. News*, Sept. 3, 1869.

NEW PROPERTIES AND USES OF NAPHTHALIN.

BY DR. ADOLPH OTT.

The naphthalin, discovered in 1820 by Garden, is found to be of great importance. Its derivatives have produced benzoic acid, benzol, nitro-benzol, and aniline, as well as fine yellow and red dyes. The yellow was described in a translation from Dr. Brimmer in the August number of this journal.

PREPARATION OF NAPHTHALIN.

H. Vohl describes the following method for the preparation of this hydro-carbon as the most practical: For the crude product that part of the pitch or dead oil is selected which solidifies when cold; it is obtained by fractional distillation. The dead oil is put into suitable vats and left in a cool cellar from six to eight days, when crystals of naphthalin are formed. The liquid part

is then drawn off, and the crystals are reduced to a powder in a mortar. It is then put into felt sacks or a centrifuge for the purpose of removing the moisture which may have been retained among the crystals. This mass is then subjected to a gradually increased hydrostatic pressure, after which it is transferred into an iron vessel provided with a coil for heating by steam, and a stirrer which must be so arranged that it can be operated while the vessel is closed. When melted, a few per cent. of soda lye is mixed with it for the purpose of separating the carbolic acid and certain resins. The liquid obtained is blown off after a short time, and the operation repeated; finally the mass is washed with water until all alkaline reaction has ceased. The liquid naphthalin is then mixed with a small percentage of oil of vitriol of 45° Baume, which is allowed to remain with it from two to three hours, at a temperature of 212° Fahrenheit, when the naphthalin is transferred to cast-iron stills capable of withstanding a high heat. It will overflow at a temperature of 410° Fahrenheit, in a thick stream. If the still is sufficiently large, 100 pounds of naphthalin may be easily obtained within twenty minutes. The water of the condensing tank must be kept at 170° Fahrenheit, the receiver being also kept in water of that temperature. When the heat in the distilling vessel has reached a temperature of 450° Fahrenheit the receiving vessels are changed. After the oil has all run over, the remainder of the overflow is worked up with a new portion. Finally the substance is poured into conical cylinders of glass, metal, or moistened wood, in which it soon solidifies, and in contracting separates from the sides. It is thus formed into sticks, like sulphur.

ON SOME NEW PROPERTIES OF NAPHTHALIN.

The naphthalin obtained in this way is similar to alabaster, cracks easily in the warm hands, and becomes negatively electric on being rubbed with silk. Its specific weight at 66° Fahrenheit, as indicated by Vohl, is 1.15173; it melts at 174°, and boils at 452°.

Melted naphthalin absorbs a large quantity of atmospheric air, which is given off in cooling. This expulsion is so turbulent

that the liquid, in quantities of one to two pounds, appears to be boiling. The absorbed air is also the cause of the open spaces found in the interior of the sticks. According to Vohl the air absorbed by naphthalin is considerably richer in oxygen than atmospheric air; *perhaps it is pure oxygen*. Melted naphthalin readily dissolves substances which are not otherwise easily dissolved. Vohl discovered that indigo is dissolved with great facility, forming, with the naphthalin, a dark blue-violet liquid, from which the indigo, in cooling, separates and forms into fine needles, shining like copper. The amorphous sulphides of arsenic, tin and antimony are dissolved readily, and separate in cooling into crystalline forms. It also dissolves phosphorus, sulphur, iodine, the iodide and chloride of mercury, arsenious, succinic, benzoic, and oxalic acids.

The sulphide of elayl, of Loewig and Weidman (C^4, H^4, S^2), is taken up very readily by melted naphthalin, which, in cooling, forms small grains, proving, under the microscope, to be crystalline masses.

TRANSFORMATION OF NAPHTHALIN INTO BENZOIC AND BENZOL.

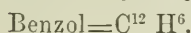
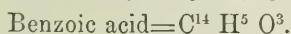
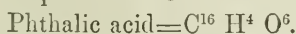
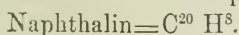
The first step in the preparation of benzoic acid from naphthalin consists in the conversion of the latter into naphthalic or phthalic acid by the method of Vohl; the second is the conversion of phthalic into benzoic acid.

1. *Naphthalic acid*.—The formula of naphthalin being C^{20}, H^8 , that of naphthalic acid C^{16}, H^4, O^6 ; the operation consists in taking C^4, H^4 from the original product and combining O^6 with it. This is accomplished by dissolving 12 parts of pure naphthalin in 90 parts of concentrated sulphuric acid, and carefully adding to this solution 80 parts of finely pulverized black oxide of manganese. After the reaction is completed the product is boiled in four or five times its own volume of water until the generation of carbonic acid has almost ceased; then the liquid is diluted with its own volume of water, filtered, and evaporated by steam in an iron boiler, lined on the inside with lead, whereby sulphate of manganese is obtained separately. The mother lye, on being further evaporated, furnishes the naphthalic acid.

2. *Benzoic Acid from Naphthalic Acid*.—This process, as

performed by Messrs. Depouilly Brothers, is based upon the fact that phthalic acid mingled with a surplus of lime, and at a temperature of 625° to 660° F, is converted into benzoate of lime. It must be performed in vacuum. This reaction may be expressed by the following equation: naphthalate of lime $= C^{16}, H^4, O^6 + 2CaO$, and hydrate of lime $= CaO, HO$, yield, when heated to the above temperature, benzoate of lime $= C^{14}, H^5, O^3 + CaO$, and carbonate of lime $= 2(CaO, CO^2)$. Decomposition of water and formation of carbonic acid then takes place. To successfully accomplish this operation, however, requires considerable skill and practice.

Benzoic acid is separated from benzoate of lime by hydrochloric acid, and with respect to the benzol, it can be obtained by subjecting benzoate of lime to distillation with lime. This operation is nearly always successful. The following formulæ give the successive steps in these operations:



The latter may serve for the production of nitro-benzol, $C^{12}, H^5, O + NO^3$, also aniline, the formula of which is C^{12}, H^5, N .—*Jour. Applied Chemistry*, Sept., 1869.

PARCHMENT.

The ancient process employed for producing parchment was nearly analogous to that now actually in use. Goat and sheep-skins are preferred for making parchment; white calf, lamb, and still-born kid-skins are reserved for vellum. The art of the parchment maker consists in making these skins very thin and almost transparent, they yet being perfectly firm and strong for use. After the hides have been depilated, unfleshed, and partly ungreased, they are immersed into a solution of alum and sea salt; they are then very quickly dried and stretched out on wooden frames, by means of screws, and drawn so tightly that no wrinkle or fold remains. When the skin is very dry the workman, with a sharp iron, takes off all the flesh which may

adhere to its internal surface, then, turning his grater towards the back, he removes all the dirt, and the water which has accumulated on the external side, or epidermis, taking great care not to injure the same. Upon which he proceeds to pounce it, that is to say, he covers the skin, on the inner side only, with a layer of very fine powdered dead lime, and then passes a very large pumice-stone over it. The lime absorbs with rapidity all the water yet retained in the skin. After these operations, the skin is again dried, and then given to the polisher, who treats it again in precisely the same manner as before described. He makes it thinner and more equal, gives it a beautiful polish, by means of a very soft pumice-stone. The parchment is then folded, shaved off, put in the press, and sent forth to the trade. Vellum is only a superior quality of parchment; it is made of the finest skins, generally from the lamb or the calf, as its name indicates (*veel* in the middle-ages meant calf). A solution of gum water and fine white-lead is spread on the vellum, in order to give it a whiter and smoother aspect. The intestines of animals have sometimes been employed. Zonore states, in his "Annals," that the Library at Constantinople possessed Homer's works written in golden letters on the intestine of a serpent, which was 120 feet in length. Parchment in former times was dyed yellow or purple; the latter being generally reserved for sacred books, or for the use of royal families.—*Morgan's Brit. Trade Journ.*, July 2, 1869.

FRENCH BRANDY.

Cognac, with its brandy distilleries and its 24,000 inhabitants, is reported by the Hon. H. P. Vereker, her Majesty's Consul at Tonnay-Charente, to be one of the wealthiest towns in the world in proportion to its size. The quantity of brandy exported from Tonnay-Charente in 1868 was 9,187,816 gallons, nearly the whole of which was exported to the United Kingdom. In 1863 the exportation was only 3,988,358 gallons, in 1866 it reached 11,562,210 gallons, and in 1867 the quantity was 9,770,420 gallons. In recent years there has been a larger quantity shipped in bottle instead of in cask, and although the brandies

exported in 1868 show a slight diminution compared with 1867, yet the number of cases containing bottled brandy shipped has increased from 558,086 in 1867 to 627,602 in 1868, of which 576,989 were sent to the United Kingdom. The least quantity contained in a case is 12 bottles; many have more, but, reckoning only 12 in each case, the exportation would involve 7,500,000 bottles. The brandy exported from Charente in 1868 is valued at 1,887,678*l.*, of which 1,733,854*l.* was conveyed in British bottoms, and 153,824*l.* in foreign; the latter mostly to Australia. Notwithstanding the slight diminution in quantity last year, there was an augmentation in the value. The vintage of 1868 was severely checked by some late frosts, and the exceptionally dry summer operated in the same direction; but when the grape was subjected to distillation the alcohol contained in the juice was found to be considerably above the average, and the brandy produced from a given quantity proportionately larger. It is therefore believed that the exports will continue on an extensive scale in the present year.—*Morgan's Brit. Trade Journ.*, July 2, 1869.

HOW SNUFF IS MADE.

The process of manufacture is nearly as follows:—

The leaf is stripped from the stem in large quantities, and steeped in water until thoroughly wet. It is then placed in a kiln, where it dries until it is simply flexible, losing all that crispness which it originally had. From the drying kiln it is taken to a strong screw press, and placed in an oblong box, where it is pressed until it becomes a solid block. This is done that it may present a hard, unyielding surface to the knives of the cutter, beneath which it is next placed. It may be well to state that each manufacturer possessing a cutter has to give security to the amount of 3000 dollars for the payment of his producing tax. The tobacco is cut closely by the machine, from which it is taken to the drying floor above. Here it is spread in a heap to ferment, a process that requires about a month to perfect. The greatest caution and attention are required while the weed is in this state to keep it from spoiling; like bread,

however, the nearer you can get it to spoiling, without actually doing so, the better it will be. It has to be turned and moved constantly until it is thoroughly fermented, when it is taken down stairs again and put through the mill. This mill consists of a series of conical hoppers called "mulls," in which are placed four vertical iron rollers, which act as mill stones in grinding the tobacco. The manufacturer has to give security in 1000 dollars for each "mull" also, to insure the payment of his tax to the government. The tobacco comes out of the "mull" in the shape of what is called "coarse meal," the grain being about twice the size of coarse Indian meal. After being wet and manipulated this becomes "Rappee" snuff without further grinding, and is the cheapest kind. The whole mass is then put into barrels in a perfectly cool condition. It has no smell or flavor whatever. After remaining in the barrels a short time it becomes heated, and in the course of ten days or two weeks it is taken out, with a high flavor and strength. The longer it is kept in the barrels the darker it becomes in color, and it also gains additional strength. Salt is then mixed with it to cool it down and keep it. If "Scotch" snuff is desired, it is made perfectly dry, and ground in the mill again to make it of finer grain. This is the whole mystery of snuff-making.—*Morgan's Brit. Trade Journ.*, July 2, 1869, from *New York Druggists' Circular*.

THE BORACIC ACID SPRINGS IN TUSCANY.

To the Editor of the Pharmaceutical Journal.

Under the impression that some of your readers might like to see a short account of these interesting springs, I have jotted down a few memoranda which I made on the occasion of a visit to one of them in the summer of last year.

Six in number, and all of volcanic origin, the springs are situated high up the mountains, nearly midway between Florence and Rome. The scenery during the greater part of the journey from Florence is very beautiful, the road passing through vineyards and olive plantations, varied by large copses of myrtle bushes. In the immediate neighborhood of the springs, however, it is as uninteresting as can well be imagined, the large

amount of sulphurous gas evolved very possibly affecting the vegetation to a greater or less extent. The boracic acid is found, mixed with other matter, in three different states :—

1. Mixed with mud, forming a thick paste, almost solid.
2. As a thick, muddy solution, very much resembling Thames water at low tide.

3. As a fountain of the solution, very highly concentrated, and so pure that there is not the slightest smell of any compound of sulphur with it. This is the more remarkable, as in both the other forms the presence of sulphur is strongly indicated by the smell.

Of the pasty mixture there were only three or four vats or wells; whilst of the more liquid preparation there were about twelve or fourteen,—varying in diameter from 30 to 50 or 60 feet.

The clear solution was thrown up to a height of about 30 feet (on some days rather higher, and on some not so high); but to prevent waste, a huge cone-shaped basket is fastened over it, a short distance above ground, by means of which it can be the more easily guided into any one of the numerous vats and coolers waiting to receive it.

The muddy liquid mixture is drained off into large tubs holding about 150 gallons each. Upon cooling, the very impure acid crystallizes round the sides of the tub, whence it is afterwards removed to be purified.

From 2688 to 3253 casks of commercially pure boracic acid are sent away from this place yearly, each cask weighing on an average 300 kilos. At a rough calculation this would give us 1,893,900 kilos, or 1691 tons, as the quantity annually sent into the market from this one source. As there are five other sources in various parts of the mountains, all of them in full action, and two or three much larger than the one I have seen, the sum total would amount to, at least, 10,500 tons collected per annum. I say “at least,” for I have put the average lower than it really is, and I have also supposed that each spring gave the same average; instead of which, two or three of them, as I have said before, are much larger than the others. Three thousand men and boys in all are employed in the works, the men with their

families forming a village by themselves a short distance away from the springs. Each village, too, is perfect in its way, finding its own church, etc., and having manufactories of cloth, paper, tools, etc. Almost everything, in fact, is home-made, and, as a rule, by no means badly made. Should any of my "brother chips" ever find themselves at Florence, I would strongly recommend a visit to one of these interesting places. They will be amply repaid their extra trouble and expense.

At the first glimpse of the spring it appears very like a small volcano in full eruption. The flames are wanting, it is true, but everything else is there; the peculiar cone-like appearance of the wells, with their seething, bubbling contents, and the volumes of steam and gases which issue from the ground in every direction, accompanied by the peculiar rumbling sound which is always to be heard there, all combine to produce an effect upon the visitor which is not soon forgotten.

Apologizing for the length to which I have drawn my jottings, I remain, yours truly,

W. B.

Florence, August 19, 1869.

—*Lond. Pharm. Journ.*, Sept., 1869.

EVOLUTION OF AMMONIA GAS FROM MUSHROOMS,

BY M. EL. BORSCHOW.

The author says that, many years ago, the late Professor Sachs observed that when a glass rod, moistened with dilute hydrochloric acid (specific gravity, 1.12) was brought near vigorously and healthily growing mushrooms, there appears a white vapor, evidently due to the formation of chloride of ammonium. This fact has been confirmed by Dr. G. Lehmann, while the late Alexander Von Humboldt stated that mushrooms constantly give off, not only ammonia, but also hydrogen. The author of this paper has thoroughly investigated this subject, taking due care to eliminate all sources of error from his experiments by every precaution modern science can suggest and successfully apply. Several engravings would be absolutely necessary for the proper understanding of these researches; but we briefly notice the following results:—(1) different kinds and species of

mushrooms give off, while growing vigorously, weighable quantities of ammonia; (2) this evolution of ammonia is not confined to full-grown mushrooms only, but also to the young individuals, and even to some varieties of mushroom spawn; (3) this evolution of ammonia is a proper function of the living organism of these cryptogamic vegetables, and is very little, if at all, influenced by exterior causes; (4) there is no direct relation between the quantity of ammonia and that of carbonic acid given off during a given period of time. The quantity of ammonia given off during a certain length of time bears no direct relation to the weight of the substance from which it is given off.—*Chem. News*, August 27, 1869, from *Bulletin de l'Académie Impériale des Sciences de St. Petersburg*, Vol. xiv, No. 1.

ON BETAIN, A NEW VEGETABLE BASE MET WITH IN
THE JUICE OF SUGAR BEET-ROOTS (*BETA VULGARIS*.)

BY M. C. SCHEIBLER.

The author says, in the year 1866 he published a brief account about a vegetable base met with in the juice of the sugar beet-roots, and which base, on account of its great solubility, becomes accumulated during the sugar manufacture from beet-root juice, in the molasses which result from that process. The author has prepared this base from the freshly expressed juice of the sugar beet-root, as well as from the molasses. The process of separation is, as might be expected from the complex nature of the substances just named, very complicated, and requires the use of phospho-molybdate of soda. Since in this country there do not exist beet-root sugar works, and since large quantities of juice have to be operated upon, we do not enter into the details of preparation, but describe the new base *betaïn*. It is a solid substance, crystallising from its alcoholic solution in large crystals, which are very deliquescent, and contain water of crystallisation, which they lose by drying at 100° or over strong sulphuric acid; the base is very soluble in water, its solution saturated at 25° has a specific gravity of 1.1177, and then contains 61.8 per cent. of the anhydrous base. Betaïn does not

affect vegetable colors, is void of smell, and has a sweetish cooling taste. The result of the elementary organic analysis of betain dried and fully deprived of all water led to the formula $C_5H_{11}NO_2$; the crystalline air-dried substance has the formula $C_5H_{11}NO_2 + H_2O$. This base yields, with many acids, beautifully crystallised salts, and readily forms well-crystallised double salts with the chlorides of gold and platinum, mercury, cadmium and zinc. When betain is boiled with an aqueous solution of caustic potassa, it is thereby split up into several bases, among which trimethylamin is found. Oxidation of betain by means of chromic acid and the action of strong hydriodic acid, both tried in sealed tubes, led to no results of any value. Betain resists the oxidising action of chromic acid.—*Chem. News*, August 27, 1869, from *Berichte der Deutschen Chem. Gesellsch. zu Berlin*, 1869.

NEW APPARATUS FOR THE CONCENTRATION OF SULPHURIC ACID.

By M. COTELLE.

It is a well known fact that the concentration of sulphuric acid in platinum vessels is an expensive process, owing to the high price of the first purchase of these apparatus, and the expense attending any soldering or repair. The author has had made a column, lined inside with fire-bricks, and made outside of good ordinary bricks; it rests on a large pedestal. This column is open at both top and bottom; but in these openings are fitted fire-clay stoppers. The inside of this apparatus is fitted with previously calcined pumice-stone; inside the lower portion of this column, openings are made between the bricks, through which a current of highly-heated air is forced. From the top the acid, which has to be concentrated, is made to trickle on the pumice-stone, and, meeting with a current of highly-heated air, the superfluous water is driven off, and the acid, on arriving at the bottom, is in a concentrated state, and runs off in properly-arranged vessels.—*Chem. News*, August 27, 1869, from *Jour. de Pharm. et de Chim.*, July, 1869.

Minutes of the Philadelphia College of Pharmacy.

Meetings were held by adjournment on May 10th, May 24th and May 31st, 1869. The Committee on revision of the By-Laws reported, and after discussion the proposed By-Laws were modified and directed to be reported to the next semi-annual meeting.

At the meeting of May 10th the Treasurer reported the receipt of one hundred dollars toward the Building Fund.

The Auditors who were appointed to examine the accounts of the Committee of Ways and Means, reported that they had attended to the duty, and found the accounts with accompanying vouchers correct, and, on motion, the Committee of Ways and Means were discharged.

At the meeting of May 24th Mr. A. B. Taylor presented to the College the second diploma issued by this institution, it having been granted to Dr. Wm. Sharpe. It was directed to be framed and placed in a conspicuous place in the College Building.

Sept. 27th, 1869. The semi-annual meeting was held at the College Hall. J. J. Ottinger and J. L. Supplee were reported as having passed the June examination and received the diploma of the College. The subject of the revised By-Laws was taken up and partly considered, section by section.

The semi-annual election having been called for, the ballot resulted in the choice of Wilson H. Pile, M. D., A. B. Taylor, W. C. Bakes, H. N. Rittenhouse, Edward Parrish, Evan T. Ellis, Wm. J. Jenks, and Chas. Shivers, as Trustees for twelve months.

Committee on Deceased Members.—Edw. Parrish, Wm. Procter, Jr., and Chas. Bullock. On motion, adjourned to Oct. 1st, at 2 P. M.

Oct. 1st, 1869.—Adjourned meeting held at College Hall. Minutes read and approved, and the By-Laws were then considered.

The Code of Ethics was next brought up for discussion and adopted, with a mere verbal alteration.

It was then moved and seconded that the By-Laws as read and amended be adopted, which was unanimously determined on.

Adjourned to Oct. 5th, 1869.

Oct. 5th, 1869.—The following gentlemen, eminent for their attainments as chemists or pharmacutists, having been duly proposed in accordance with the By-Laws, at the last annual meeting, were elected Honorary Members of this College :

England.—Daniel Hanbury, F.R.S., London ; Henry Deane, Clapham, London ; Wm. Crookes, F.R.S., London ; John Elliott Howard, London.

France.—M. Berthelot ; M. Louis Mialhe ; M. Bussy ; Pierre François Guillaume Boullay ; M. Pasteur ; M. Cahours, all of Paris.

Germany.—Dr. Fred. Mohr, Coblenz ; Prof. Fred. Wohler, Gottin.

gen ; W. Dankworth, Magdeburg ; Joseph Ditttrich, Prague ; Prof. A. W. Hoffmann, Berlin ; Adolph Duflos, Breslau ; K. Von Schroff, Vienna.

Russia.—Iran Pfeffer, St. Petersburg ; C. Frederking, Riga.

Netherlands.—Dr. J. E. De Vry, Rotterdam ; Prof. J. S. Stas, Brussels, *Belgium* ; Dr. X. Landerer, Athens, *Greece* ; Prof. De Luca, Naples, *Italy* ; Dr. F. A. Fluckiger, Bern, *Switzerland* ; Carlos Ferrari, Madrid, *Spain*.

[From the Minutes of the American Pharmaceutical Association, see page 496.]

DRAFT OF A PROPOSED LAW

To regulate the Practice of Pharmacy and the Sale of Poisons, and to prevent the Adulteration of Drugs and Medicines.

PREAMBLE.

Whereas, the safety and welfare of the public is endangered by the sale of poisons by unqualified or ignorant persons ; and whereas in all civilized countries it is found necessary to restrict this species of traffic and to provide by law for the regulation of the delicate and responsible business of compounding and dispensing the powerful agents used in medicine ; and whereas the adulteration and sophistication of drugs and medicines is a species of fraud which should be prevented and suitably punished ; therefore be it enacted, &c.

Section 1. From and after the day of it shall be unlawful for any person to keep open shop for retailing, dispensing or compounding medicines and poisons, unless such person shall be a *registered pharmacist* within the meaning of this act, and shall also conform to the regulations as to the keeping, dispensing, selling and compounding poisons hereinafter provided ; and every shop kept open for the retailing, dispensing and compounding of medicines and poisons shall be under the direct personal care, oversight and management of a registered pharmacist or registered assistant in pharmacy, and every registered pharmacist owning more than one such shop shall employ at every such shop, except the one he himself manages, a registered assistant in pharmacy, to manage and supervise that particular shop only.

Sect. 2. No person shall be allowed to assume, use or exhibit the title of *Registered Pharmacist* or *Registered Assistant in Pharmacy* unless he shall have actually been registered as such in accordance with this Act.

Sect. 3. No person shall be entitled to become a registered pharmacist unless he be either a graduate in pharmacy, a practising pharmacist, or a practising assistant in pharmacy.

Sect. 4. *Graduates in Pharmacy* shall be understood to be such persons only as have obtained the diploma of a regularly incorporated or chartered *College of Pharmacy* within the United States ; and also persons possessing a diploma or degree from some pharmaceutical institution situated in a foreign country, said diploma being acknowledged and endorsed by the Pharmaceutical board of this State as sufficient to entitle such person to be considered a Graduate in Pharmacy.

Practising Pharmacists shall be understood to be such persons only as at or prior to the passage of this Act have kept and continue to keep open shop within this State for dispensing and compounding the prescriptions of medical practitioners, and for the sale of drugs and medicines.

Practising Assistants in Pharmacy shall be understood to be such persons only as shall have attained the age of twenty-one years, and who shall have served four years' apprenticeship in a shop where the prescriptions of medical practitioners were dispensed or compounded, and who shall have passed an examination by the Pharmaceutical board of this State as hereinafter provided.

Sect. 5. On or before the first day of June after the passage of this Act, and every third year thereafter on or before the same date, the incorporated Colleges of Pharmacy and Pharmaceutical Societies of this State shall submit to the Governor the names of twenty pharmacists or professors in Colleges of Pharmacy, out of which number the Governor shall appoint seven persons who shall constitute the Pharmaceutical Board of the State of _____, who shall hold office for the term of three years and until their successors shall have been appointed; and in case of removal from the State, resignation or death of any member, the Governor shall appoint in his place a registered pharmacist or a professor in a College of Pharmacy to serve as a member of the Board for the remainder of the term.

Sect. 6. The duties of the Pharmaceutical Board shall be to examine all candidates presenting themselves; to direct the registration by the Registrar of Pharmacists of all persons properly qualified or entitled under this Act; to cause the prosecution of all persons violating its provisions; and to report annually to the Governor on the condition of pharmacy in the State, and such suggestions as they may deem expedient.

Four members of the Pharmaceutical Board shall constitute a quorum; they shall organize by the election for the entire term of a President and a Secretary, who shall sign all certificates and other official documents; they shall meet at least twice a year, and shall have power to make by-laws for the proper fulfillment of their duties under this Act; they shall likewise have power to prepare a list of foreign Pharmaceutical Institutions or Colleges, the diplomas of which will be recognized as equivalent to the diplomas of Colleges of Pharmacy in the United States, and to endorse their approval on any such diploma when presented to them; for said endorsement they shall be entitled to a fee of five dollars.

All persons applying for examination shall pay to the Pharmaceutical Board ten dollars; and, if passing the examination, shall be furnished with a certificate in accordance with Schedule E of this Act, for which certificate no fee shall be exacted or paid.

Sect. 7. Immediately on the passage of this Act the Governor of the State shall appoint a *Registrar of Pharmacists*, who shall hold office for three years, at the end of which time a successor shall be appointed or the same person re-appointed; and in case of the death, resignation or removal of a Registrar before the expiration of his term of office, the Governor shall appoint some person to the office for the remainder of the term.

A Registrar guilty of any misconduct or malfeasance in office shall, in addition to the penalties hereinafter provided, be removed from office, and a successor appointed by the Governor.

Sect. 8. The duties of the Registrar shall be to keep a book in which shall be entered, under the supervision of the Pharmaceutical Board, and in the form set forth in Schedule B to this Act, the name and place of business of every person doing business in this State who shall apply to him in the form prescribed in Schedule C to this Act, producing proper evidence in accordance with sections three and four of this Act that he is a *graduate in pharmacy*, or a *practising pharmacist*, or a duly qualified *practising assistant in pharmacy*. It shall also be the duty of the Registrar to erase from his register the name of any registered pharmacist who may have died or removed from the State, and to make all necessary alterations in the location of persons registered under this Act. For the first registration as registered pharmacist, the Registrar shall receive a fee of five dollars. *Provided*, that all persons in business at the time of the passage of this Act, shall be entitled to registration on paying one dollar.

And in order to enable the Registrar to duly fulfil the duties hereby imposed upon him, it shall be the duty of every registered pharmacist, upon changing his place of business, to forthwith notify the Registrar by letter of such change, and to enclose a fee of one dollar, upon receipt of which notification and fee the Registrar shall make the necessary alterations in his register. And it shall

be the duty of every registered pharmacist to communicate by letter to the Registrar each year, on the first day of December, whether he still continues practising pharmacy at his registered place of business, and to enclose a fee of one dollar for the insertion of his name and business address in the register for the ensuing year; and on or before the tenth day of January in each year, commencing with January, 18 , said Registrar shall notify every registered pharmacist who shall not have written to him as aforesaid; and in case an answer, enclosing an additional fee of fifty cents, shall not be received by the Registrar within fourteen days, such registered pharmacist shall be stricken from the register, and his name be at once reported by the Registrar to the President of the Pharmaceutical Board. *Provided always*, that his name shall be restored to the register on payment to the Registrar of a fee of five dollars, and in case more than one year has elapsed since the date of sending the aforesaid notification, he shall also produce proper evidence of being entitled to registration, in like manner as if his name had never been registered. All aforesaid notifications sent by said Registrar shall have printed on the outside an inscription directing their return to the office of the Registrar, in case the persons to whom they are addressed cannot be found.

Graduates and practising assistants in pharmacy shall, upon application to the Registrar in the form set forth in Schedule D to this Act, be entitled to be entered as registered assistants in pharmacy at an annual fee of twenty-five cents.

The Registrar shall, on the written demand of any registered pharmacist or registered assistant, accompanied by a fee of twenty-five cents, give him a certificate under his own hand, setting forth, in the manner presented in Schedule H to this Act, that such person is so registered.

No name shall be entered on the register except of persons authorized by this Act to be thus registered, nor unless the Registrar be satisfied by proper evidence in accordance with this Act, that the applicant is entitled to be registered.

The Registrar shall, in the month of March of each year, cause to be printed and published, as nearly as may be in the form of Schedule B of this Act, a correct list of the names of all registered pharmacists and registered assistants, arranged in the alphabetical order of their surnames, with their respective places of business, and such printed list shall be entitled the *Official Register of Pharmacists* within the State of ; a copy of which, or a certificate under the hand of the Registrar, shall be evidence in all the courts of this State that the persons therein specified are registered according to the provisions of this Act, and the absence of the name of any person from such printed register shall be presumptive evidence that such person is not registered according to the provisions of this Act; and each and every registered pharmacist within the State shall be supplied by the Registrar with a copy of said official register of pharmacists, to be sent by mail free of charge, and the postage thereon prepaid.

Sect. 9. Any Registrar who shall wilfully make or cause to be made any falsification in any matter relating to the said official register of pharmacists, and any person who shall wilfully procure or attempt to procure himself to be registered under this Act, by making, or producing, or causing to be made or produced, any false or fraudulent representation or declaration, either verbally or in writing, and any person aiding or assisting him therein, shall be deemed guilty of misdemeanor, and shall, on conviction thereof, be sentenced to be imprisoned for a term not exceeding twelve months, nor less than three months, and in addition thereto may be fined a sum not exceeding one thousand dollars, and be paid into the State Treasury.

Sect. 10. *And be it further enacted*, that any person not a registered pharmacist, who shall after the day of 18 , keep open shop for the retailing or dispensing of medicines and poisons, or who shall take, use, or exhibit the title of *Registered Pharmacist*, shall for every such offence be liable to a penalty of fifty dollars, to be paid to the Pharmaceutical Board to

defray expenses, and such penalty shall be sued for and recovered in the same manner as is now provided by the Revised Statutes of this State, for the recovery of penalties in other *qui tam* actions. *Provided, however*, that in rural districts, where there is no registered pharmacist within three miles, it shall be lawful for retail dealers annually to procure licenses from the registrar of pharmacists, at a fee of one dollar, as retailers of poisons, and all sales of poisons by persons so licensed shall be recorded in a book kept for that purpose only, in the same manner as provided in Sect. 13 of this Act.

Sect. 11. And any registered pharmacist or authorized retailer of poisons, who shall fail to comply with the regulations of this Act in regard to retailing, dispensing and compounding of poisons, shall be liable to a penalty of fifty dollars for the first offence, and one hundred dollars for the second and every subsequent offence, and such penalty shall be sued for, recovered and paid to the Pharmaceutical Board of this State in the manner provided in Section 10.

Sect. 12. *But be it provided*, that nothing hereinbefore contained shall apply to, or in any manner whatever interfere with, the business of any practitioner of medicine who does not keep open shop for the retailing, dispensing or compounding of medicines and poisons, nor prevent him from administering or supplying to his patients such articles as may seem to him fit and proper, nor with the making and dealing in proprietary remedies, (popularly called patent medicines), unless such medicines should be wholly or partly composed of any of the articles enumerated in Schedule A, nor with the business of wholesale dealers in supplying poisons according to the ordinary course of wholesale dealing to retailers and physicians, and for use in the arts.

And upon the decease of any registered pharmacist, actually in business at the time of his death, it shall be lawful for any executor, administrator or trustee of the estate of such registered pharmacist, to continue such business, if and for so long only as such business shall actually be conducted by a registered pharmacist or registered assistant in pharmacy; but if such person be not registered, he must cause himself to be registered within twenty days of his commencing to conduct the business of said decedent, under the same penalties as are prescribed in the tenth section of this Act, which penalties shall be collected from the estate of said decedent.

Sect. 13. *And be it further enacted*, that from and after the _____ day of _____, it shall be unlawful for any person to sell, either by wholesale or retail, any poison, without distinctly labelling the bottle, box, vessel, or paper, and wrapper or cover in which said poison is contained, with the name of the article, the word poison, and the name and place of business of the seller.

Nor shall it be lawful for any registered pharmacist, or authorized retailer of poisons, to sell or dispense a poison without being satisfied that it is for legitimate use, and before delivery to the buyer, making or causing to be made an entry in a book kept for that purpose only, to be preserved for at least five years, and to be always open to the inspection of the Pharmaceutical Board, the Registrar of Pharmacists, the Board of Health, the Coroner, and the officers of the different Courts, stating in the form set forth in Schedule F, annexed to this Act, the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, and the purpose for which it is stated by the purchaser to be required. *Provided*, that no article shall be considered a poison, within the meaning of this Act, unless such article be enumerated in Schedule A, annexed to this Act, or shall hereafter be declared a poison by law.

Sect. 14. The provisions of Section 13 shall not apply to articles to be exported, nor to any articles forming part of the ingredients of medicine compounded in accordance with the written prescription of a practitioner of medicine; but all prescriptions, whether or not composed in part of an ingredient or ingredients declared by this Act to be poisonous, must be carefully kept by the pharmacist on a file or in a book kept for that purpose only, and numbered in the order in which they are received or dispensed; and every box, bottle, vial, vessel, or packet containing medicine so dispensed, must be

labelled with the name and place of business of the Pharmacist so dispensing them, and be numbered with a number corresponding to that on the original prescription retained by the Pharmacist on his file or book, as aforesaid. Such prescription must be preserved at least five years, and shall be open to the inspection of the writers thereof, and a copy must be furnished by the pharmacist, if demanded by either the writer or purchaser, or both, for which copy or copies the pharmacist shall not exact any fee.

Sect. 15. From and after the passage of this Act, it shall be unlawful for the proprietor of any pharmaceutical shop to allow any person not a graduate or a practising assistant in pharmacy, to compound or dispense the prescriptions of physicians containing poisons, except as an aid under the immediate supervision of said proprietor, or a graduate, or a practising assistant in pharmacy.

Sect. 16. From and after the passage of this Act, all persons who shall knowingly, intentionally and fraudulently adulterate or cause to be mixed any foreign or inert substance with any drug or medical substance, or any compound medicinal preparation recognized by the pharmacopœia of the United States or of other countries as employed in medical practice, with the effect of weakening or destroying its medicinal power, or who shall sell the same otherwise than in the unbroken original package put up by the manufacturer and labelled with his name and address, or who shall sell such unbroken original package knowing the article contained therein to be thus adulterated, shall be guilty of a misdemeanor, and on conviction thereof before the Criminal Court shall forfeit all the articles so adulterated and shall pay a penalty not exceeding one thousand dollars, and in addition thereto may be sentenced to imprisonment not exceeding one year; said fine to be recovered and paid over to

Sect. 17. It shall be the duty of the Pharmaceutical Board of this State to appoint for such counties where the necessity therefor is deemed to exist, and subject to the approval of the Court of Quarter Sessions, one or more experts; and whenever a distinct charge or accusation is made, under oath or affirmation, before an Alderman or Justice of the Peace, that there is reasonable ground for believing that any dealer or manipulator of drugs, wholesale or retail, is guilty of any of the charges specified in Section 16 of this Act, such accusation to be substantiated by an examination or analysis of the alleged adulterated drug or preparation by said expert, together with a sample or samples of the articles examined or analyzed, the said Alderman or Justice of the Peace may issue authority to search for and arrest the sale of the adulterated articles until the case can be acted on by the grand jury, and, if a true bill be found, until the Court decides by competent testimony for or against the defendant.

Sect. 18. All other Acts and parts of Acts inconsistent with this Act are hereby repealed.

Sect. 19. This Act shall be known as the Pharmacy and Poison Act, 18 , and may always be so cited, described and spoken of.

SCHEDULE A.

Aconite and its preparations.
Arsenic and its preparations.
Belladonna and its preparations.
Cantharides and the tincture.
Chloroform.
Cotton Root and its preparations.
Corrosive Sublimate.
Croton Oil.
Cyanide of Potassium.
Digitalis and its preparations.
Ergot and its preparations.
Henbane and its preparations.
Hydrocyanic Acid.
Nux Vomica and its preparations.

Opium and its preparations, paregoric excepted.
Oxalic Acid.
Poison Hemlock or Conium.
Savine.
Strychnia and all poisonous vegetable alkaloids and their salts.
Tartar Emetic.
Volatile Oil of Bitter Almonds, of Pennyroyal, of Savine, and of Tansy.
Proprietary or secret medicines recommended, sold or advertised as Emmenagogues and Parturients.

SCHEDULE B.

DATE.	NAME.	PLACE OF BUSINESS.	QUALIFICATIONS.	REMARKS.
1870.				
Jan. 10.	A. B.	329 Broadway, N.Y.	In business within this State prior to the passage of the Pharmacy and Poison Act, 18	
Jan. 11.	C. D.	Athens, Greene Co., N. Y.	Graduate in Pharmacy of Maryland College, of class 1862-63.	Died June 11, 1870.
Jan. 20.	E. F.	280 Fulton Street, Brooklyn, N. Y.	Practising assistant in pharmacy, examined by Pharmaceutical Board of this State on day of 1870.	July 8, 1870. Removed to and carries on business on his own account at 48 John St. Ithaca, N. Y.; has passed examination of College of Pharmacy of the city of N. York, June, 1870.
Jan. 29.	G. H.	Middletown, N. Y. With A. B., city of New York.	Registered assistant in Pharmacy. Graduate of the Mass. College of Pharmacy, Class 1868-69.	September 1, 1870. Commenced business on his own account, 136 Lake Street, Buffalo, N. Y.

SCHEDULE C.

Declaration by a person applying to become Registered Pharmacist under the Pharmacy and Poison Act, 18

To the Registrar of Pharmacists of the State of _____ I,
 doing business (or about to commence business) at _____ in the County
 of _____ State of _____ hereby declare, that I kept open shop for
 dispensing and compounding the prescriptions of medical practitioners at
 _____ in the County of _____ and State of _____ on or be-
 fore the _____ day of _____ 18 ____; or am a graduate of the
 College of Pharmacy, Class 18 ____; or am a graduate of the [foreign in-
 stitution], my diploma having been acknowledged and endorsed by the Phar-
 maceutical Board of the State of _____ on [date]; or am a practising
 assistant in pharmacy, holding a certificate of qualification by the Pharmaceu-
 tical Board of this State, dated _____ (as the case may be).

(Signed.)

Name.

Dated this _____ day of _____ 186 ____
Affidavit.

SCHEDULE D.

Declaration by a person applying to become Registered Assistant in Pharmacy.

I, _____ of _____ hereby declare, that I am a graduate of the _____ College of Pharmacy, Class 18 _____; or am a graduate of the [foreign institution, date.] my diploma having been acknowledged and endorsed by the Pharmaceutical Board of the State of _____ on the [date]; or am a practising assistant in pharmacy, holding a certificate of qualification by the Pharmaceutical Board of this State, dated _____; and apply to be entered as registered assistant in pharmacy.

(Signed) _____ Name, _____
Dated this _____ day of _____, 18 _____
Affidavit.

SCHEDULE E.

Certificate of qualification to be issued by the Pharmaceutical Board to practising Assistants in Pharmacy.

This certifies that _____ of _____ County of _____ State of _____, has produced satisfactory evidence to the Pharmaceutical Board of the State of _____ of having served not less than four years as an apprentice in a shop or shops where the prescriptions of medical practitioners were dispensed; has been properly examined by this Board, (appointed by the Governor, in conformity with Section 5 of the Pharmacy and Poison Act, 18 _____) and on ballot, after such examination is declared, by a proper vote of this Board, to be competent to dispense poisons and compound medicines, subject to all legal restrictions. In testimony whereof the Officers of this Board have hereunto signed their names this _____ day of _____ 18 _____



SCHEDULE F.

Form in which registered pharmacists and retail dealers in poisons shall keep their poison-book.

Date.	Name of Purchaser.	Name and quantity of poison sold.	For what purpose said to be required.	Remarks.

SCHEDULE G.

Form of license to be issued to retailers of poisons in rural districts.

I, _____, Registrar of Pharmacists, at the written request of _____ of _____, County of _____, State of _____, and upon his written declaration that no registered pharmacist is situate within three miles of his place of business, have, in accordance with the provisions of Section 8 of the Pharmacy and Poison Act, 18 _____, and upon payment by him of one dollar, do hereby issue to him this license, authorizing him to retail poisons under the restrictions provided in said Act.



(Signed) _____ Name, _____
Registrar of Pharmacists
Of the State of _____
Office No. _____ Street, _____
Town, _____
County. _____

Dated this _____ day of _____, 18 _____

SCHEDULE H.

Form of Registrar's Certificate to be given a registered Pharmacist or registered practising Assistant in Pharmacy.

This is to certify that _____ of _____ County of _____ State of _____, was entered on the [date], at the office of the undersigned as *Registered Pharmacist (Registered Assistant in Pharmacy)* in conformity with the Pharmacy and Poison Act of this State.

Given under my hand and seal, [town], this _____ day of _____ 18____
(Signed) _____ Name,



Registrar of Pharmacists.

Editorial Department.

MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—We have devoted more than usual space to the proceedings of this body, which are of much interest, and, though much more meagre than the official report yet to be published, will be found to embrace most of the leading points of the meeting. The membership was largely increased, and the attendance larger than usual. The Chicago members were exceedingly attentive, and rendered the stay of members very pleasant. Among other attractions was an exhibition of microscopes at the Academy of Sciences. This was a rare treat; about fifty instruments of all grades and kinds were well supplied with objects, and members attended to exhibit and explain them when needed. The amount of labor involved in the preparation of the objects exhibited was very great, and many of the visitors doubtless did not appreciate this, yet all seemed gratified. The gas was arranged in an admirable way, giving abundant light in the right place. Organic structure of various kinds, diatoms, and portions of living flowers, were included in the specimens. On Friday afternoon a steamboat excursion on Lake Michigan was taken, which gave the visitors an opportunity to see that fine body of water and the city front. On Thursday morning the members met at Dearborn Park, to enable Mr. John Carbutt to take a photographic group of the members.

EXHIBITION OF CHEMICALS AND PHARMACEUTICALS COINCIDENT WITH THE CHICAGO MEETING.—The exhibition of specimens, apparatus, etc., at the 17th Annual Meeting of the American Pharmaceutical Association, was one of the most attractive features of the occasion, and reflects great credit on Mr. James W. Mill, Chairman of the Local Committee having it in charge, as well as upon the Local Secretary, H. W. Fuller.

The exhibition was held in a hall adjoining that in which the Association met and very well adapted to the purpose. It consisted of crude drugs, chemicals, pharmaceutical preparations, glassware and apparatus.

CRUDE DRUGS.—Drugs constituted a new and decidedly important fea-

ture of the Exhibition, including a number of collections from abroad, among which that of Messrs. *Gehe & Co.*, of Dresden, Saxony, was the most interesting, both for the rarity of the specimens and their variety. Their collection included vegetable and chemical drugs, essential oils, fixed oils, powders, extracts and "condensed drugs," a class of preparations unknown here, in which aromatic woods and roots are mechanically cut into square and globular pieces of small size, each being about a dose—such as rhubarb, sassafras, liquorice, orris, marshmallow, calamus, etc. Among the essential oils were those of sandal wood, calamus, patchouli, matico, ginger root, coriander, mustard and others. Croton oil extracted by benzine oil was a speciality among the fixed oils.

Among the organic principles we noticed several alkaloids, koussin, digitalin, jalapin, caffenin, cantharidin, etc.

McKesson & Robbins, of New York, had a very excellent collection of crude drugs, well selected, comprehensive, valuable, and thoroughly well exhibited, which has much to do with the effect of such specimens on the visitors.

Other exhibitors were Messrs. *Neergaard*, of New York, *Henshaw & Brigham*, of Boston, *Hurlbutt & Edsell*, of Chicago, P. W. Bedford, W. H. Schieffelin & Co., Dodge & Alcott, and Dr. E. R. Squibb, of New York. American Medical herbs, etc., were exhibited by W. S. Merrell & Co., of Cincinnati, Messrs. Wilson, of Boston, W. H. Peck & Co., N. York, and Martin Hastings, Waukegan, Ill.

CHEMICALS were well represented. As usual, the most brilliant display was made by *Powers & Weightman*, of Philadelphia, whose collection included 220 specimens, some of which were of great value and size; the opium and cinchona alkaloids were splendidly illustrated, and general chemicals, liquid and solid very thoroughly represented.

G. Mallinckrodt & Co., of St. Louis, came next in the variety and beauty of their display, especially in liquid chemicals. *Rosengarten & Sons*, were represented by a small but excellent collection of chemical products. *L. Martin & Co.*, of Philadelphia, exhibited a very creditable collection of general chemicals, including several alkaloidal preparations. *Etienne, Rogers & Co.*, of Paris, had a collection of chemicals, camphor, etc. *Mahla & Chapall*, of Chicago, exhibited various important liquid chemicals, including acids, ammoniacal and ethereal preparations, and some saline compounds. Glycerin was exhibited by *Henry Bower*, of Philadelphia, *W. J. M. Jordon & Hartman*, *Laist & Co.*, of Cincinnati, and *F. Surg.* of Vienna. Chemicals were also shown by Messrs. Stein, Hirsh & Co, Henry G. D'Evers and C. G. Wheeler, of Chicago, and Messrs. *Feutchwanger*, of New York.

PHARMACEUTICAL PREPARATIONS were numerously represented by fluid extracts, sugar-coated pills, and granules, plasters, capsules, resinoids, powders, fruit juices, granulated salts, extracts of beef, cod-liver oil,

flavoring extracts and native wines. The larger collections were by Messrs. *Bullock & Crenshaw*, *Hance Brothers & White*, *Mellor & Rittenhouse* and *W. R. Warner & Co.*, of Philadelphia, *Henry Thayer & Co.*, of Cambridge, Mass., *W. S. Merrell & Co.*, of Cincinnati, *Garrison & Murray*, of Chicago, and *Perkins, Sterns & Co.*, of New York. Smaller displays were made by *S. Mason McCollin*, *A. B. Taylor*, *B. J. Crew*, and *E. Parrish*, of Philadelphia; *E. H. Sargent*, *H. A. Stone & Co.*, and *Tourtelet Bros.*, of Chicago; *J. William & Sons* and *Adolphus Glanz*, of New York, and *Dr. Wm. B. Chapman*, of Cincinnati.

COLLECTIONS OF CHEMICAL AND PHARMACEUTICAL APPARATUS were exhibited by *Henry Biroth*, of Chicago, *Bullock & Crenshaw* and *Edward Parrish*, of Philadelphia. Small collections and specialities of apparatus, surgical instruments, etc., were two numerous for our space. Druggists' glassware was well represented in the collections of *B. H. Sleeper & Co.*, of Philadelphia, and the *New England Glass Company*. Druggists' sundries were chiefly represented by *S. Maw & Sons*, of London, and *Fuller, Finch & Fuller*, of Chicago, whose articles were numerous and excellent. The department of books and paints and colors our space prevents us to notice, though represented by several exhibitors.

BRITISH PHARMACEUTICAL CONFERENCE.—This body met at Exeter on 17th and 18th of August. The President, *Daniel Hanbury, F.R.S.*, occupied the chair. About 110 new members were elected. The report of the Executive Committee states the membership to be 647. The treasury has \$400 in excess of expenditures. The Committee recommend the publication annually of a "report on the Progress of Pharmacy," a year book on the plan of our Report. The President's inaugural address is a paper of much interest, and is directed to subjects of interest to pharmacutists. The present state of cinchona culture in India is noticed, and especially the process called *mossing*, by which portions of the stem from which bark has been stripped, become re-covered with bark by covering the part with moss, and, strange to say, this new bark is found to contain a larger percentage of alkaloids than that which preceded it. The important papers of *Lefort*, on *Ipecac*, *Schoonbroodt*, of *Leige*, on the effects of drying on plants, are noticed, and other items of information on the progress of pharmacy during the year. Papers read on the first day were on Pharmaceutical Responsibilities and Remuneration, by *Edward Smith*, of *Torquay*. Syrup of Iodide of Iron, by *M. Car-teighe*; on Distillates by *Joseph Ince*; on Lard and its preparations for use in Pharmacy, by *Wm. Smith*; the application of spectral analysis to Pharmacy, by *W. W. Stoddart, F.C.S.*; &c. Syrup of Phosphate of Iron, by *T. B. Groves, F.C.S.*; the Assay of *Ipecacuanha*, by *Prof. Att-field*. The papers read on the second day were on Pharmaceutical Education, by *W. Schacht*; Contributions to the History of *Buxin*, by *Dr. Flückiger*; on Tincture of Acetate of Iron, by Messrs. *Deane & Jeffer-*

son; on the prevention of Accidental Poisoning, by Mr. G. Bunell; on Chloral as an Anæsthetic, by Mr. Hanbury; on Pill Excipients, by W. D. Savage; Historical Notices of Chemists and Druggists, by the same; rare Essential Oils, by Mr. Hanbury; Carbolic Acid and Human Parasites, by T. A. Redwin; on Donovan's Solution, by W. E. Heathfield; on the detection of Fixed Oils in Plants, by Mr. T. T. P. Bruce Warren, on the depuration of Ammoniacal Salts for Pharmacy, by Wentworth Lacelles Scott; on Chlorinated Lime, by the same; on Sulphurous Acid, by the same, and on the Commercial Powder of Cinchona and Ginger, by the same.

On August 19th a complimentary dinner was given by the Chemists of Exeter, and on the 20th an excursion to Torquay, was made and enjoyed.

The final meeting was held on Monday, August 24th, when it was decided to meet in Liverpool, in 1870. A ballot for officers for 1869-70 was then held, which resulted in the election of W. W. Stoddart, of Bristol, *for President*; J. Abraham, of Liverpool, H. C. Baildon, Edinburgh, H. S. Evans and Joseph Ince, of London, *for Vice Presidents*; Mr. Brady, of New Castle, *Treasurer*; Prof. Attfeld and Mr. Reynolds, *General Secretaries*; E. Davies and J. Dutton, *Local Secretaries*, and a *Committee* of 9 members.

On the whole, the Exeter meeting shows a continued advance in the spirit and earnestness of the British Conference.

THE THIRD INTERNATIONAL PHARMACEUTICAL CONGRESS.—We learn through the *Pharmaceut. Zeitung*, No. 74, 75, 76, 1869, that this convention was held in Vienna on the 9th and 10th of September, in the Aula of the Imperial Academy of Sciences. Most of the delegates had arrived the previous evening, and were received by the Local Committee in the parlor of the Hotel Ross.

The first session commenced Sept. 9, at 9 o'clock A. M.; 160 pharmacists present. Mr. Beckert, President of the Austrian Apothecaries' Association, called the meeting to order, welcomed the delegates, and urged the importance of the questions to be discussed. A Committee on Credentials reported 33 delegates, viz.:—From America and Italy each *one*, England *two*, France and Russia each *three*, North German Apothecaries Association *seven*, from the South German Apothecaries Association *three*, from Austria *ten*, from the Vienna Assistants' Association *two*, and Swiss International Pharmaceutical Association *one*. Among the delegates were Messrs. Redwood and Evans, of London, Faber, of New York, Mosca, of Turin, Robinet and Mialhe, of Paris, Von Trapp and Bjoerklund, of St. Petersburg, Danckwortt, of Magdeburg, Dittrich, of Prague, VonWaldheim and Klinger, of Vienna, and many others. Four German Pharmaceutical Journals had reporters present. The election resulted in the following officers:—Danckwortt *President*, Robinet and Von Trapp *Vice-Presidents*, Messrs. Klinger, Lehman and Vorwerck

Secretaries, Von Waldheim and Dittrich *Interpreters*. The officers then took their seats, and the discussion of the questions commenced (see page 374 of the July number) with the first—on the advisability of independent schools of Pharmacy. M. Schiffner regarded this reform as indispensable for progress. M. Georgino explained the course at the Ecole de Pharmacie, at Paris, which lasts three years, and both he and Robinet advocated such schools. Von Trap spoke in the affirmative. Schlosser in favor of such schools connected with, but as a distinct branch, of the University, so that the apothecary will not have to receive his teaching from the medical stand-point. Von Trapp insisted that the teachers should be apothecaries, or such as understand and can teach pharmacy to advantage. To the pure chemist all bodies are alike and apothecaries become scientific but not practical. Faber explained the courses in the American Colleges of Pharmacy, and advocated the separation of Pharmaceutical from Medical instruction. Reimann stated that North Germany was in favor of letting the apothecary get his knowledge where and how he pleased so he could pass the examination. The discussion was continued by Messrs. Wolfrom, Schiffner, Redwood, Mosca and Mirus, nearly all agreeing in the necessity of having pharmacutists as teachers, when the following answer was adopted, viz.:—*The establishment of pharmaceutical schools as separate branches of the universities, and with the appointment of apothecaries for all purely pharmaceutical branches is as much in the interest of the public as in that of pharmacy.*

The *second* question, relative to the creation of "syndic chambers" (or "boards" of apothecaries to be elected annually) from each district, to manage affairs between the authorities and the apothecaries by arbitration, was decided *affirmatively*.

The *third* query, reported on by Reimann, whether the supremacy exercised by physicians over pharmaceutical affairs is useful to the state, the public, and the apothecaries, was decided unanimously in the *negative*.

The extensive range of medical studies prevents the physician from understanding pharmacy practically, and he is not a proper judge of its requirements. In consequence, despite the existing laws, the medical control has become in a great measure nominal; and to look upon pharmacy as an appendage to medicine is an antiquated idea. The committee recommend a mixed board of physicians and apothecaries, presided over by a lawyer.

The *fourth* query, relative to a universal Pharmacopœia, was not practically acted upon; M. Waldheim, however, stated that the Société de Pharmacie had compiled a small codex, bringing about 100 of the stronger preparations of nearly all Pharmacopœias into a parallel relation, so that their nomenclature, composition and synonyms may be examined with readiness; and he advised that copies should be sent to all pharmaceutical societies.

The *fifth* query, relative to assaying organic alkaloids, was referred to the next Congress and not acted upon.

It was then determined to communicate the action of the Congress to the several governments. The time and place of the next meeting was then discussed, and, after determining to extend the interval, it was decided to meet in St. Petersburg in 1872.

The Vienna apothecaries entertained the Congress handsomely at a supper on the 9th, and on the third day a free excursion via Mount Semmering to Murzzuschlag and return was enjoyed by the visiting members of the Congress.

THE INTERNATIONAL MEDICAL CONGRESS met at Florence, Italy, on the 23d of September, at 9 o'clock A. M., in the beautiful Hall of the Ministry of Education, which was decorated with the flags of all nations. M. Bargone, the Educational Minister of State, welcomed the members (200) and hoped their discussions would tend to alleviate the ills of humanity. Salvatore de Renzi, of Naples, presided.

PHARMACY IN CALIFORNIA.—Our September number contained an account of a preliminary meeting of druggists in San Francisco, Cal., to organize a society. Since then an organization has been effected under the name of the California Pharmaceutical Society, and temporary officers appointed; the permanent officers were to have been elected on the 11th of October, the time fixed for the annual meeting. The intent is to embrace the Pharmaceutists of all California who are friendly to the aims of the Society, which are embodied in Article I, of the Constitution, and which embrace improvement in educational means, the encouragement of home production and manufactures, the establishment of proper ethical relations between pharmaceutists and physicians, the culture of general science and the proper education and training of the rising generation of apothecaries. Such excellent objects must receive the good wishes of all. We hope our California friends will keep us informed of their progress.

ANNUAL INTERNATIONAL ART EXHIBITIONS AT LONDON.—The Commissioners of the Exhibition of 1851 announces the first of a series of Annual International Exhibitions of selected works of fine and industrial art, will be opened at South Kensington, in London, on Monday, May 1, 1871, and close Sept. 30th, 1871. Permanent buildings are about to be erected for the purpose, near the Royal Agricultural Gardens, and one-third of the entire space will be given to foreign exhibitors. Only objects of a certain degree of merit will be admitted. The objects are classed, 1st, *fine arts*, 2d, *scientific inventions and discoveries of all kinds*, 3d, *manufactures*, 4th, *horticulture*, the latter being held by the Royal Horticultural Society. The programme in detail will be found in the *Journal of the Society of Arts*.

PROFESSIONAL CHANGES.—Prof. Strecker, of Tübingen, has been called to Würzburg, to replace Prof. Scherer, deceased, and Dr. Engleman, of Giessen, has gone to Bonn.

UNIVERSITY OF MICHIGAN SCHOOL OF PHARMACY.—In our September number was a notice of the graduating class of this School, in which we ventured to doubt the propriety of giving the diploma of "Pharmaceutical Chemist" to students of the school if they had not had shop practice. In a letter since received from Dr. A. B. Prescott, the assistant of Prof. Douglass, he says "No requirement of training in the shop is made; either for admission to the course or for graduation. Our school believes it to be quite as well for the young pharmacist, better for his employer, and far better for the public that scientific preparation for the drug business should *precede* experience in it. Some students enter our course after several years of shop experience; in consequence, they have advantage in the College of greater eagerness. Others graduate to engage for the first in a drug store; they have thereby the advantage in their vocation of a more enlightened experience. The course now established here embraces training, under supervision, at the prescription stand—actual work—certainly as well deserving the credit of responsible experience for the pharmaceutical student, as hospital practice does for the medical student." This is all well enough as regards the preparation of the student for his pharmaceutical duties, but to give a diploma to a student intimating that he is a pharmaceutical chemist, which means an apothecary or pharmacist, when he has no practical familiarity with drugs and with shop experience, is not right. The point of the matter is whether the latter class leave the University and offer themselves as qualified clerks, or whether they enter as beginners? In any case the school authorities should adopt some other title for their diploma given to such, and not that which in the most thoroughly practical English Pharmaceutical School is given by act of Parliament only to accomplished pharmacutists. (See advertisement sheet.)

A course of Practical Chemistry arranged for the use of Medical Students, by William Odling, M. B., F.R.S.. Fellow of the College of Physicians, with illustrations, from the fourth and revised London edition. Philadelphia. Henry C. Lea, 1869; pp. 261, octavo.

This little work is intended to teach the student practical chemistry, and is divided into four chapters. The first treats of chemical reactions and chemical manipulation: the second of analysis: the third of toxicological chemistry, noticing the detection of the principal mineral and vegetable poisons; whilst the last part is devoted to animal chemistry, chiefly of the urine, normal and abnormal, and of calculi and the blood, and the concluding section treating of bile, milk and bone.

The author has been able to express his meaning clearly, whilst omitting all unnecessary descriptions of substances and processes, confining his lessons to the limits fixed by himself. The short range of subjects for analysis specially interesting to the medical student has shortened the labor of the author, whilst sufficient of the details of analysis are given in

Chapter 2d, to help the student in case he wishes to extend his researches into the domain of general chemistry.

Half Yearly Compendium of Medical Science. A synopsis of the American and Foreign literature of medicine, surgery, and the collateral sciences, for six months. Edited by S. W. Butler, M. D., and D. G. Brinton, M. D. Part iv. July, 1869. Philadelphia; pp. 323.

Though rather behind the usual time of publication, the *Compendium* comes laden with valuable information, gathered from the Journals, and classified for easy reference by the physician. To those who do not subscribe extensively to medical journals, the *Compendium* will afford a harvest of recorded observations in practical medicine.

The Physician's Visiting List for 1870, nineteenth year of its publication. Philadelphia. Lindsay & Blakiston.

Physicians are informed that the "Visiting List," now become an established help to the practitioner, is ready.

OBITUARY.

PROFESSOR THOMAS GRAHAM, Master of the Mint, died on the 17th of September, at London, in his 64th year, having been born in Glasgow on the 21st of December, 1805. His education commenced in Glasgow, was concluded in Edinburg. He lectured for several years on chemistry in his native city, at the Andersonian Institution. In 1847 he succeeded Dr. Edward Turner, at University College, London, and he continued to hold this appointment until 1855, when he was appointed Master of the Mint in place of Sir John F. W. Herschel, resigned. Prof. Graham took an active part in the establishment of the Chemical Society of London in 1840, and the Cavendish Society in 1846, being president of the latter. Prof. Graham was made a fellow of the Royal Society in 1836, and a correspondent of the French Institute in 1848, and received the Copley Medal for his chemical discoveries, (*Pharm. Journ*). He is best known in this country through his excellent "elements of chemistry," which passed through several editions. His recent experiments and speculations concerning hydrogenium exhibit an undiminished intellectual power, the loss of which to chemical science all must regret.

PETER MARK ROGET, M. D., author of one of the Bridgewater treatises on Animal and Vegetable Physiology, died recently in London, at the advanced age of 90 years. He was a fellow of the Royal College of Physicians, and formerly a Professor of Physiology at the Royal College.

INDEX

TO VOL. XLI. (VOL. XVII. THIRD SERIES) OF THE AMERICAN
JOURNAL OF PHARMACY.

Abietit.....	419
Acid, ellagic from gallic acid.....	141
Acidum hydriodicum dilutum.....	41
Acid-proof cement.....	332
Acid, valerianic.....	33, 302
Acid, tannic, quantitative determination of.....	193
Aconitia and pseudo-aconitia.....	314
Action of light on citrate of iron and quinia.....	329
Action of carbolic acid on reptiles.....	414
Action of boiling acid and alkaline liquids on glass and porcelain.	428
Additional note on soap liniment.....	222
Additional note on Vermont opium.....	23
Adulterated opium.....	1
Adulteration of precipitated sulphur.....	248
African tragacanth	439
Alcohol from lichens.....	17
Alcoholic narcotic extracts.....	313
Alcohol, its purification by permanganates.....	38
Alkaloid by fermentation.....	299
Alkaloids from the wood of nectandra rodiaei.....	454
Allyl compounds.....	302
American Pharmaceutical Association, notice of meeting of.....	371, 468
Ammoniacal extract of valerian in capsules.....	207
Ammoniacal gas from mushrooms.....	558
Ammoniated tincture of lupulin.....	415
Ammonia, bicarbonate of, in pharm. preparations..	294
Annual report of the Surgeon General U. S. Army, 1868.....	93
Annual international art exhibition in England	574
Apomorpha.....	449
Apparatus for spreading plasters	455

<i>Arnold, A. B., M.D.</i> , on a case of poisoning by cyanide of potassium.....	137
Aromatic sugar.....	118
Aromatic sulphuric acid.....	247
Arrow root.....	301
Artesian water at Charleston, S. C.....	333
Arsenical spring water in New Jersey.....	32
Assay of peruvian bark.....	22
Assay of opium.....	21
Assay of glycerin.....	206
Association of Medical Journalists.....	375
Atropia, accidental poisoning by.....	84
Atropia, criminal poisoning by.....	136
Atropia, effects of.....	203
<i>Attfield, Prof. John</i> , on sulphate of potassium in ergot.....	246
“ “ on aromatic sulphuric acid.....	247
“ “ on adulterated precipitated sulphur.....	248
Austrian Pharmacopœia, the new.....	475
Bad drugs.....	81
<i>Bedford, P. W.</i> , on syrupus lactucarii, U. S. P.....	48
“ “ on the morphia strength of commercial opium.....	159
Belladonna as an anti-gallactic.....	29
Belladonna plaster, on a new.....	348
Behaviour of mannite to alkaline solutions of copper.....	317
Betain, a new vegetable base from beet root.....	559
Bicarbonate of ammonia as a pharmaceutical preparation.....	294
<i>Bigelow, Dr. J. W.</i> , letter relative to svapnia.....	224
Bismuth metallic.....	165
Bismuth, detection of phosphate of lime in subnitrate of.....	129
Bite of the centipede.....	124
<i>Blachez, M. Amedee</i> , on a new falsification of saffron.....	323
<i>Blas, M.</i> , Thévétin.....	310
Boracic acid springs in Tuscany.....	556
<i>Bowman, Henry K.</i> , on the quantitative determination of tannin in the vegetable astringents.....	14
<i>Bringinghurst, Ferris</i> , on the use of yellow wax in ointments.....	59
British Pharmaceutical Conference.....	474, 571
Buckthorn berries, coloring principle of.....	321
Burgundy pitch and caoutchouc plaster.....	208
Bumping of boiling liquids.....	422, 527
Bushby's pill machine.....	62
<i>Campbell, Samuel</i> , on a new process for fluid extracts, by which any drug may be exhausted by percolation without heat.....	385
Campbell's method of percolation, on.....	525
Camphor as a preventive to oxidation.....	30
Caranna gum.....	231
Carbolic acid as a poison.....	126

Carbolic acid or coal tar creosote.....	259, 353
Carbolic acid plaster.....	349
Carbolic glycerin and plaster.....	92
Catalpa bark.....	28
Catalogue of the class of the Philadelphia College of Pharmacy.....	94
Cativa de mangle.....	236
Castor oil and glycerin pomatum.....	398
Cedars of Lebanon	435
Chemical accuracy.....	133
Chemical composition of canaüba wax.....	207
Chicago meeting of the American Pharmaceutical Association.....	469
Chloroform	19
Chrome alum, utilization of.....	256
Chickering, Jr., Rev. J. W., on the flowers of early spring.....	436
Chloral a new anæsthetic.....	447
Cholera, source of in India.....	20
<i>Close, Geo C.</i> , on salts of conia.....	61
Cod-liver oil, etherized.....	176
Collodion for protecting silver wares.....	371
Collodium tannatum.....	404
Coloring principles of buck-thorn berries	331
Coloring matter of claret.....	239
Conia, salts of.....	61
Commercial hydrargyrum cum creta.....	43
<i>Commaile, M.</i> , on kreatinin, an index of putrefaction.....	131
Compound syrup of wild cherry bark.....	391
Confection of senna.....	156
Contamination of hydrochloric acid with sulphuric.....	50
Conspectus of the medical sciences.....	190
Conchinin.....	421
Copalchi bark	417
<i>Cotelle, M.</i> , on a new apparatus for concentrating sulphuric acid.....	561
<i>Covell, T. J.</i> , on unguentum hydrargyri nitratis.....	211
<i>Creecy, William P.</i> , on quinia pill mass.....	7
Criminal abortion, its natural evidence and laws	91
Criminal poisoning by atropia.....	136
<i>Crookes, William Esqr.</i> , F.R.S., on chemical accuracy.....	133
Crystallized nitrate of mercury in pharmacy.....	202
Crystallized digitalin.....	315
Culture of opium in the United States.....	120
Cupido bark of Venezuela.....	417
<i>Curtman, Dr. Charles O.</i> , on a pharmaceutical still.....	197
“ “ “ on tinctura iodiinii decolorata	345
Cyanide of potassium, case of poisoning by.....	137
Cypripedium among senega.....	20
Cytisina.....	547

Darby's propylactic fluid.	396
Death from atropia through the ignorance of an apothecary.....	84
Decolorized tincture of iodine.....	345
Definitions of the materia medica list in U. S. Pharmacopœia.....	519
Deposit in fluid extract of cloves, crystalline.....	47
Detection of phosphate of lime in subnitrate of bismuth.....	129
Detection of adulteration in olive and almond oils.....	132
Detection of picrotoxin in beer.....	369
Detection of prussic acid in the blood.....	465
Dichloro-acetic acid as a cauterizer.....	19
Digitalin in American digitalis.....	55
Digitalin, crystallized.....	315
<i>Diehl, C. Lewis</i> , on fractional percolation.	337
Discussion of the drug law at the Chicago meeting.....	496
<i>Donovan, M.</i> , on the process for preparing James' powder.....	529
Double salts of carbolic acid.....	444
Drug law, the.....	579
Drug law proposed at the Chicago meeting.....	562
<i>Duckworth, Dr. Dyce</i> , on a new preparation of lupulin....	415
<i>Duffield, Dr. S. P.</i> , process for fluid extracts.....	2
" " " on the relative proportion of digitalin in European and American digitalis.....	55
" " " on the preparation of pyrophosphate of iron.....	58
<i>Dunn, John A.</i> , on acidum hydriodicum dilutum.....	41
<i>Eberle, Charles L.</i> , on gelseminia.....	35
" " on suppositories.....	53
Ecole pratique des haut etudes, Paris.....	13
Editorial department.....	81, 182, 280, 371, 469, 569
Effects of atropia.....	203
Ellagic from gallic acid.....	141
Ellis' medical formulary.....	90
Elixir of calisaya, iron and bismuth.....	219
Emetia, preparation and properties of	307
<i>Emmerling, Dr. A.</i> , on the action of acids and alkalies on porcelain and glass ware.....	428
Emulsion of medicinal oils.....	204
Emulsion of cod-liver oil.....	238
<i>Engleman, George, Jr.</i> , on chloral as a new anæsthetic.....	447
Ergot, sulphate of potassa in.....	246
Essential principles and practice of medicine	191
Essence of sassafras.....	429
Essential oil of cochlearia officinalis.....	464
Estimation of unsaponified fat in soap.....	22
Estimation of potassa in technical laboratories.....	239
Etherized cod-liver oil	176
Eucalyptus globulus.....	300
Extract of meat.....	157

Extractum Pepo Fluidum.....	195
Exhibition at the Chicago meeting.....	569
<i>Fuber, John</i> , on pharmacy in the United States.....	399
<i>Fairthorne, Robert F.</i> , on an acid proof cement.....	332
Falsification of gum balls.....	16
<i>Felletar, Dr. Emil</i> , on capsicina.....	432
Filtration under pressure.....	412
<i>Fittig, Rudolph, and W. H. Mielck</i> , on piperinic acid.....	427
<i>Fleck, Dr. H.</i> , on the substitution of sodium for phosphorus in lucifer matches.....	257
Flint's practice of medicine.....	91
Flora of Palestine and Syria.....	433
Flowers of early spring.....	436
<i>Flückiger, Dr. F. A.</i> , on African tragacanth.....	439
“ “ “ on arachis hypogæa.....	464
Fluid extract of frostwort.....	28
Fluid extract of cloves, deposit in.....	47
Fluid extract of liquorice root as an excipient for quinia	117
Fluid extract of pumpkin seed.....	195
Fluid extracts, Campbell's process for.....	385, 525
Fownes' chemistry, new edition.....	478
Fractional percolation.....	337
French brandy.....	554
Fusing points of fats.....	22
Fusing and congealing points of fats.....	430
Fusibility of volatile metals.....	423
<i>Gardner, Robert W.</i> , note on pyrophosphate of iron.....	215
“ “ elixir of calisaya, iron and bismuth.....	219
Gas generators.....	297
Gelatin coated pills.....	476
Gelseminia.....	35
Gleanings from American Journals.....	27, 124
Gleanings from foreign journals.....	14, 204
Gleanings from German Journals.....	19, 238, 297
Glycerin as a solvent of starch, sugar and gum.....	16
<i>Glycerin crystallized</i>	17
Glycerin used as a bath.....	17
Glycerin as an excipient for pills.....	119
Glycerate of tar.....	115
Graeger on the manufacture of borax.....	549
<i>Graham, Prof. Thomas</i> , on hydrogenium and the relations of platinum and palladium	177
<i>Grimaux and Ruotte</i> , on essence of sassafras.....	429
Groundnut from arachis hypogæa....	464
<i>Groves, T. B.</i> , on senna.....	65
“ “ on liquor opii sedativus.....	160

Gum sennaar distinguished from gum arabic.....	419
Guu cotton, new property of.....	169
Haofash, a new styptic.....	31
Hair and hair dyes....	171
<i>Hand, Charles</i> , extractum pepo fluidum.....	195
<i>Harrop, Joseph</i> , on fluid extract of liquorice root as an excipient for quinia,	117
“ “ improper use of titles.....	221
<i>Harz, Dr. C. O.</i> , production of opium near Berlin.....	311
<i>Hinrichs, Gustavus</i> , on filtration under pressure.....	412
<i>Hirsh, Joseph</i> , on carbolic acid plaster.....	349
History of the medical department of the University of Pennsylvania.....	188
Historical memoirs of the Philadelphia College of Pharmacy.....	97
Honorary members of the Philadelphia College of Pharmacy, new.....	561
<i>Hornsby, Mr. G. G.</i> , on the detection of phosphate of lime in subnitrate of bismuth..	129
Hot springs of Arkansas.....	27
<i>Hough, J. B., M. D.</i> , sponge tents.....	446
How snuff is made.....	555
<i>Hubschmann, M. F.</i> , on aconitia and pseudo aconitia.....	314
Hufeland's powder.....	391
<i>Husband, T. J., Jr.</i> , on the leaves of podophyllum peltatum.....	200
<i>Husemann, Aug.</i> , on cytisina.....	547
<i>Hutchison, Hamilton</i> , on crystallized nitrate of mercury.	202
<i>Hutton, W. R., Esq.</i> , on the igniting points of some commercial products,	252
Hydrargyrum c. creta	43
Hydrated silicate of magnesia.....	405
Hydrated oxide of iron, soluble in sugar syrup and glycerin.....	326
Hydrocyanic acid vapor, new test for.....	174
Hydrogenium.....	177
Igniting points of the vapors of some commercial products... ..	253
Improper use of titles.....	221
Improved apparatus for subliming benzoic acid.....	21
Improved mode of manufacturing glucose from starch.....	429
Improved preparation of neutral acetate of copper.....	448
Impurity in commercial chloroform.....	206
India the great nursery of cholera.....	28
Indelible ink	404
Influence of oil of sassafras on tobacco	451
Influence of drying on the active principles of plants.....	319
Inhalation of nitrous oxide with oxygen.....	126
Iodated milk.....	405
Iodine and iron alum water.....	31
Iodide of cadmium as a reagent for alkaloids.....	18
Ipecacuanha of Brazil, assay of.....	305
Ipecacuanha of New Grenada, assay of... ..	305
Isophloridzin.....	419

<i>Jean, M. F.</i> , note on the utilization of chrome alum.....	256
<i>Jenkins, Dr. T. E.</i> , on glycerin as an excipient for pills.....	119
" " " on carbolic glycerin and plaster.....	292
<i>King, James T.</i> , on an adulteration of opium.....	1
<i>Kirk, John, M.D.</i> , on the copal of Zanzibar.....	441
<i>Kæhler, Dr. H. and Dr. H. Hornmann</i> , on hydrated oxide of iron soluble in sugar syrup and glycerin.....	326
<i>Kral, Franz J.</i> , of Prague, on the preparation of narcotic extracts.....	313
Kreatinin, an index of putrefaction.....	131
Labarraque's wine of quinium.....	123
<i>Lactuca elongata</i>	145
<i>Lactucarium</i> syrup.....	48
<i>Leche de sande</i>	126
<i>Lefort, M. J.</i> , on the deposit in fluid extract of cloves.....	47
" " comparative examination of Brazillian and New Granada ipecac.....	305
" " on the preparation, properties and composition of emetia... ..	307
Legislation for pharmacy in Pennsylvania.....	182—280
Legislation for pharmacy in Ohio.....	184
Legislation for Pharmacy in North Germany.....	371
<i>Lehman, Peter K.</i> , notice of.....	104
<i>Lehman, William</i> , notice of.....	103
Letter of Charles Ellis, resigning the Presidency of the Philadelphia College of Pharmacy.....	277
Lemon juice and its decomposition.....	75
Liability of druggists.....	127
<i>Liquor opii sedativus</i>	160
<i>Liquor bismuthi</i>	153
Liquid sulphurous acid.....	328
List of graduates of the Philadelphia College of Pharmacy, 1869.....	273
List of contributors to the building fund of the P. C. Pharmacy.....	182—287
<i>Lewellyn, J. F.</i> , on the deposit in fluid extract of cloves.....	47
<i>Löwe, M. J.</i> , on the formation of ellagic acid by means of gallic acid.....	141
<i>Lupulin</i> , on a new tincture of.....	415
<i>Mahla, Dr. F.</i> , on a new mode of preparing sulphate of manganese.....	357
<i>Maisch, Prof. John M.</i> , gleanings from the German Journals..19, 238, 297, 417	
" " " on the milky juice of <i>lactuca elongata</i>	145
" " " on some Panama drugs.....	230
" " " on the nomenclature and definitions of the U.S.P..	519
Manufacture of chlorine from perpetually regenerated manganite of cal- cium.....	538
Manufacture of borax from borate of lime.....	549
<i>Markoe, G. F. H.</i> , on the removal of odorous compounds from alcohol by " " permanganates.....	38
" " on liquor bismuthi.....	151
" " on confection of senna.....	156

<i>Martensen, Dr.</i> , on the quantitative estimation of tartaric acid.....	323
<i>Martindale, William</i> , on carbolic acid plaster.....	153
“ “ on a new plaster-spreading apparatus.....	455
Maryland College of Pharmacy.....	186
Massachusetts College of Pharmacy.....	374
<i>Marshall, Charles</i> , notice of.....	102
<i>Matthiessen, Dr.</i> , <i>F.R.S.</i> , and <i>Mr. Wright</i> , on apomorphia.....	449
<i>Maubre, M.</i> , on an improved method of manufacturing starch glucose.....	429
Means of preventing the bumping of liquids.....	422
Meeting of the Alumni of P. C. Pharmacy, 1869.....	186
Medical botany in Canada.....	126
Metallic bismuth.....	165
Meeting of the American Medical Association.....	376
Meeting of the American Pharmaceutical Association.....	569
Metrical weights in England.....	379
Mercurialina.....	417
<i>McDonald, George</i> , critical note on permanganate of potassa as a means of distinguishing chlorine, iodide and bromine.....	393
<i>Mill, James W.</i> , on tinctura ferri chloridi.....	457
<i>Millemann, Philip L.</i> , on the preparation of deodorized tincture of opium..	4
Milky juice of lactuca elongata.....	145
<i>McClagan, Dr. Douglass</i> and <i>Dr. Arthur Gamgee</i> , on the alkaloids in the wood of nectandra rodiaei.....	453
Minutes of the Philadelphia College of Pharmacy.	273, 561
<i>Moore, J. B.</i> , on syrup of tar.....	6
“ “ on glycerate of tar.....	115
“ “ on soap liniment.....	121
“ “ additional note on soap liniment.....	222
“ “ on tinctura opii.....	406
Morphia strength of commercial opium.....	159
<i>Müller, Hugo</i> , on means of preventing the bumping of boiling liquids.....	422
Naphthalin converted into benzoic acid.....	552
National Pharmacopœial Convention of 1870.....	375
<i>Nativeille, M. C. A.</i> , on crystallized digitalin.....	315
Nectandria.....	354
New test for nitrates and chlorates.....	20
New uses of carrageen.....	128
New property of gun cotton.....	169
New test for hydrocyanic acid in vapor.....	174
New use of mica.....	206
New falsification of saffron.....	323
New belladonna-plaster.....	348
New and simple process for fluid extracts without heat.....	385
New plaster spreading apparatus.....	455
New properties and uses of naphthalin.....	550
New apparatus for concentrating sulphuric acid.....	560
New York Apothecaries Act of 1868.....	377

Nitrate of mercury in pharmacy	202
Nitric ether.....	419
Nitrite of potassa in saltpetre.....	20
Nitro-phenic acid.....	466
Nomenclature of the U. S. Pharmacopœia.....	519
Note on an adulteration of opium.....	1
Note on quinia pill mass.....	7
Note on confection of senna.....	156
Note on pyrophosphate of iron.....	215
Note on capsicina.....	432
Note on lemon juice and its decomposition.....	75
Novel mode of catching mice.....	5
Obituary, <i>Dr. Von Martius</i>	192
“ Edwin R. Smith.....	192
“ John E. Corbridge.....	192
“ Dr. William B. Herapath.....	192
“ Dr. Robley Dunglison.....	383
“ Prof. J. Nickles.	384
“ Louis Felix Joseph Garot.....	384
“ Dr. Charles D. Meigs.....	384
“ Prof. J. E. Berard.....	480
“ Prof. H. E. Dussauce.....	480
“ Dr. Louis M. Emmanuel	484
“ Prof. Thomas Graham.....	576
“ Peter Mark Roget, M.D.....	576
Occlusion of hydrogen by metals.....	144
Odling's chemistry.....	575
Officers of the American Pharmaceutical Association, 1869-70.....	489
Oil of stillingia.....	149
Ointment for hæmorrhoids.....	391
Opium, note on an adulterated.....	1
“ deodorized tincture of	4
“ assay of.....	21
“ note on Vermont.....	23
“ note on Virginia.....	209
“ again, Vermont.....	217
“ Prussian.....	311
“ culture of in India.. ..	477
Our Journal.....	87
Our School of Pharmacy.....	85
Ozonic ether.....	156
Palladium, relations of hydrogen to.....	177
<i>Palmer, J. Dalney, M.D.</i> Is valerian an antidote for strychnia?.....	119
“ “ “ on the trumpet-plant in diarrhœa.....	292
Panama drugs, on some.....	230

Parasites of infectious diseases.....	143
Paraffin in wax.....	418
Parchment paper.....	553
Paris Exposition, 1867.....	8, 108
<i>Parrish, Edward, Prof.</i> , Historical memoirs of the P. C. Pharmacy.....	97
<i>Percy, Dr. S. R.</i> , on atropia in tooth-ache	203
Perfumery at Paris Exposition.....	13
Persulphide of hydrogen.....	239
Permanganate of potassa as a means for distinguishing chlorine, bromine and iodine.....	393
Peroxide of hydrogen for diabetes.....	409
Pharmaceutical education in England.....	86
Pharmaceutical Society of St. Petersburg.....	87
Pharmaceutical still, Curtman's.....	197
Pharmaceutical notices.....	388
Pharmacist, the.....	378, 471
Pharmacopœia of 1870, shall its authority be respected?.....	289
Pharmacy in Holland.....	372
Pharmacy in the United States.....	399
Pharmacy in California.....	473, 574
Phosphorus, turpentine an antidote to.....	175
Pill machine, Bushby's.....	63
Pilulæ terebinthinæ comp.....	389
Piperinic acid.....	427
Platinum apparatus in Exposition at Paris, 1867.....	108
Podophyllin.....	418
Podophyllum peltatum leaves.....	200
Poison for rats.....	352
Poisoning by opium sold for rhubarb.....	125
Poisoning by cyanide of potassium.....	137
Poisoning by cyanide of potassium by substitution.....	461
Poisonous anilin dyes.....	14
Poisonous exhalation from quinces.....	15
Poisonous dyes.....	366
<i>Post, Rev. Geo. E.</i> , on the flora of Palestine.....	433
Preparation of deodorized tincture of opium.....	4
Preparation and properties of tar water.....	18
Preparation of sponge tents.....	27
Preparation of pyrophosphate of iron.....	58
Preparation of hydriodic acid.....	240
Preparation of cylinders for drummond light.....	240
Preparation of alcoholic narcotic extracts.....	313
Preparation and properties and composition of emetia.....	307
Preparation of sulphate of manganese.....	351
Preparation of pure muriatic acid.....	420
Prescription of explosive mixtures by physicians.....	470
Presence of gum in wine.....	206

Proceedings of the American Pharmaceutical Association, 1868.....	188
Process for fluid extracts, Campbell's	385
Process for preparing James' powder by M. Donovan.....	529
<i>Procter, William, Jr.</i> , on vacuum maceration by Duffield's process.....	2
“ “ “ on Paris Exposition, 1867	8, 108
“ “ “ gleanings from Foreign Journals.....	14, 264
“ “ “ additional note on Vermont opium	23
“ “ “ gleanings from American Journals.....	27, 124
“ “ “ on the culture of opium in the United States.....	120
“ “ “ on Labarraque's wine of quinium.....	123
“ “ “ note on Virginia opium.....	209
“ “ “ on titrated extracts of opium—svapnia.....	222
“ “ “ the Pharmacopœia of 1870; shall its authority be more generally respected?.....	289
“ “ “ on bi-carbonate of ammonia.....	294
“ “ “ on the proper strength of fluid extracts.....	295
“ “ “ “Sweet quinine;” what is it?.....	302
“ “ “ Pharmaceutical notices.....	388
“ “ “ castor oil and glycerin pomatum.....	398
Production of opium near Berlin.....	311
Proper strength of fluid extracts.....	295
Purification of sulphuret of carbon.....	15
Purification of odorous alcohol by permanganates.....	38
Pyrolusite as a test for the color of claret.....	418
Pyrophosphate of iron.....	215
Quantitative determination of tannin in vegetable astringents.....	193
Quantitative estimation of tartaric acid.....	325
Quinine pill mass.....	7
Quinine pills.....	30
Quinine, its solubility and estimation.....	330
Quinine, sweet, what is it?.....	302
<i>Rademacher, Dr. C. J.</i> , on sulphate of manganese.....	216
Reduction of silver.....	298
Reduction of oxides by hydrogen	335
Reduction of temperature by the solution of salts.....	425
Regeneration of pure sulphur from soda residues.....	545
Remarks on senna.....	270
Remedy for carious teeth.....	405
<i>Remington, Joseph S.</i> , on commercial hydrag. c. creta.....	43
Report on the mineral resources of the states and territories west of the Rocky Mountains, by J. Ross Browne.....	88
Report of the commissioner of agriculture, 1868.....	288
Report of the committee on queries A. P. A., 1868.....	508
Resina d'Angelim Pedra	300
Resolutions relative to pharmacy bill.....	504
Resolutions relative to Mr. Stearns	511

<i>Reynolds, H. P.</i> , on Campbell's method of percolation.....	526
<i>Rudorff, Fr.</i> , reduction of temperature by saline solution.....	425
Saccharated oxide of iron.....	324
Saffron, on a new falsification of.....	323
Sago of the Malaccas.....	432
Salt deposit near Berlin.....	336
Sanford testimonial.....	378
<i>Sansom, Dr. E.</i> , on double salts of carbolic acid.....	444
<i>Saunders, W.</i> , on the so-called oil of stillingia	149
<i>Schaffner, Max</i> , regeneration of sulphur from soda residues.....	545
<i>Schoonbroodt, Dr. Leopold</i> , on the influence of drying on the active principles of plants.....	318
<i>Schonbein, M.</i> , on a new test for hydrocyanic vapor.....	174
<i>Schumann, Theo.</i> , to prevent the bumping of liquids.....	527
<i>Schreibler, C.</i> , on the behaviour of mannite to alkaline solutions of copper,	317
“ “ on betain, a new vegetable base from beets.....	559
Secret remedies in Spain.....	477
Senna on, by T. and H. Smith.....	270
Senna, by Thomas Groves.....	65
<i>Sestina, M.</i> , on liquid sulphurous anhydride.....	328
<i>Sheppard, Prof. C. U.</i> , on the artesian water of Charleston, S. C.....	333
Shop inspection by boards of health proposed.....	81
<i>Siebert, S.</i> , on saccharate of oxide of iron.....	324
Simple process for detecting strychnia	205
Sinapism.....	417
Small weights.....	421
<i>Smith, T. and H.</i> , remarks on senna.....	270
Soap liniment	121, 222
Sodium for phosphorus in lucifers.....	257
Solubility of starch, sugar and gum in glycerin.....	16
Solubility and estimation of quinine.....	330
Solubility of phosphorus in fixed oils.....	208
Solution of acetate of alumina.....	403
Spiritus formicarum.....	405
Sponge tents.....	446
<i>Squibb, Dr. E. R.</i> , on carbolic acid or coal tar creasote.....	259, 353
“ “ “ on the contamination of hydrochloric acid with SO ³	50
Subnitrate of bismuth.....	109
Substitution of sodium for phosphorus in matches.....	257
Sulphate of atropia in tooth ache.....	127
Sulphate of manganese.....	216, 351
Sulphate of potassa in ergot.....	246
Sulphurous acid.....	241
Sulphur in Louisiana.....	449
Sulphuretted hydrogen apparatus, portable.....	297
Suppositories	53

<i>Stein, W.</i> , on the coloring principles of Buckthorn berries.....	331
<i>Stoddart, W. W.</i> , on lemon juice and its decomposition.....	75
Svapnia and sweet quinine.....	186
Svapnia, assay of.....	222
"Sweet quinine," what is it?.....	302
Synthesis of coumarin.....	205
Syrup of tar.....	6
Syrupus ferri iodidi, method of keeping.....	14
Syrupus lactucarii.....	48
Syrupus diacodii.....	300
Syrup of citric acid U. S. P.....	393
Tapioca of the Malaccas.....	432
Tar water....	18
Tar, glycerate of.....	115
Test for sulphur.....	298
Test for phosphorus.....	298
Test for morphia.....	299
Test for salicin in quinia.....	298
Testimonial to John Mackay, of Edinburg.....	476
Testing of opium.....	369
Thévétin.....	310
Third International Congress of Pharmaceutical Societies.....	373, 572
Tincture of pyrethrum roseum... ..	15, 128
Tinctura iodinii decolorata.....	345
Tinctura rhei dulcis.....	388
Tinctura kino composita	389
Tinctura opii.....	406
Tinctura opii camphorata	406
Tinctura ferri chloridi.....	457
Tinning of saucépans.....	142
Titrated extract of opium—svapnia.....	222
Tonic narcotic.. ..	389
Tonka bean in whooping cough.....	27
<i>Tourtelo, Frank J.</i> , on extract of meat.....	157
Tragacanth, African.....	439
Troth, Henry, notice of.....	106
True method of keeping syrupus ferri iodidi.....	14
Trumpet plant (<i>sarracenia flava</i>) in diarrhœa.....	292, 396
<i>Turner, William L.</i> , on aromatic sugar.....	118
Turpentine an antidote to phosphorus.....	175
Tyson's antimonial powder.....	390
<i>Umney, C., F.C.S.</i> , on sulphurous acid.....	241
Unguentum hydrargyri nitratis.....	211
University of Michigan School of Pharmacy	472, 575
Use of yellow wax in ointments.....	59
Utilization of chrome alum.....	256

Vacuum maceration.....	2
Valerian an antidote for strychnia ? is.....	119
Valerianic acid.....	33
Vermont opium again.....	217
Virginia opium.....	209
<i>Vogel, M.</i> , on the solution of starch, gum and sugar in glycerin.....	16
Want of uniformity in officinal preparations.....	81
Water baths.....	298
<i>Welden, Walter</i> , on the manufacture of chlorine by manganite of calcium.....	538
<i>Wharton, J. C.</i> , on tinctura opii camphorata.....	392
<i>Wheeler, C. Gilbert</i> , on peroxide of hydrogen in diabetes.....	409
<i>Wimmel, Dr. Th.</i> , on the fusing and congealing points of fats.....	430
<i>Wood, C. H.</i> , on metallic bismuth.....	165
“ “ on the action of light on citrate of iron and quinine.....	329
Yellow wax in ointments.....	59
Yield of extracts..	301
Zirconia lights.....	163

LIBRARY OF THE
ONTARIO COLLEGE
OF
PHARMACY

Restricted Book

The borrowing of this book is subject to the restriction as checked below.

1. May be used only in the library, not to be withdrawn at any time.
2. May only be withdrawn from 4 P.M. until 9 A.M. of the following day.
3. May be borrowed for a period of 24 hours.
4. May be borrowed for a period of 7 days.

ONTARIO COLLEGE
OF PHARMACY

American Journal of Pharmacy 41, 1869.



LIBRARY OF THE
ONTARIO COLLEGE
OF
PHARMACY



